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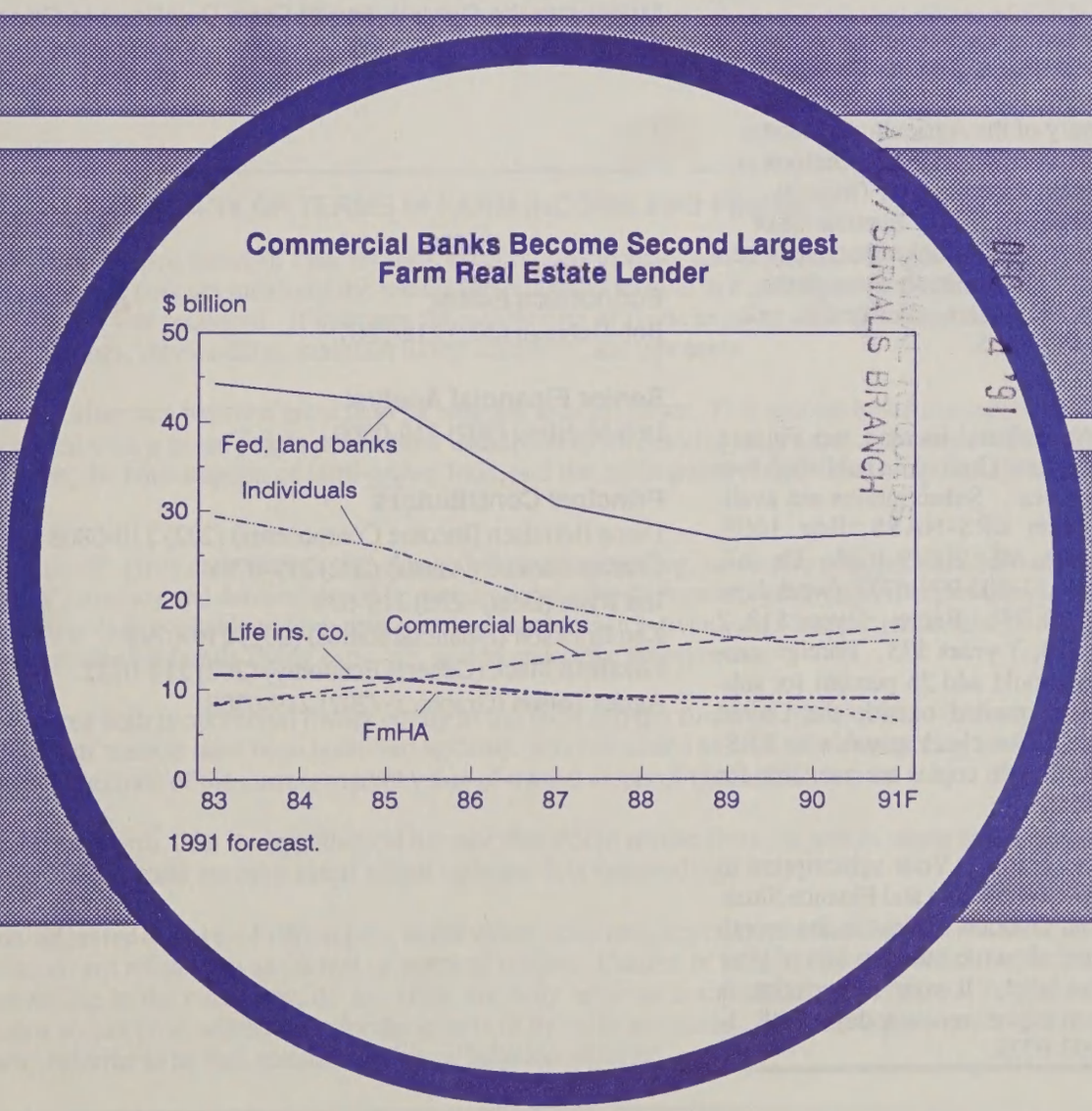
June 1991

Agricultural Income and Finance

Situation and Outlook Report



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Summary

A decline in wheat and dairy prices and reduced Government payments are contributing to lower cash earnings. With higher cash expenses, net incomes will decline from 1990. A 1-percent growth in crop sales and 1-percent drop in livestock sales likely apt to leave total cash receipts between $164 and $169 billion in 1991, below 1990's record, but above previous years.

Prices for wheat and dairy products are forecast to average well below last year, and a much smaller wheat crop is expected. Crop receipts for cash grain farms are projected 2 percent lower than in 1990 but will probably be higher for other types of crop farms. Livestock receipts are expected to drop more than 10 percent on dairy farms, but increase on red meat farms. Direct Government payments will probably total less than last year due to decreases in disaster and deficiency payments.

Cash expenses are forecast to total between $124 and $129 billion, up slightly from 1990. Livestock producers are likely to see slightly lower feed prices this year, but expansion in livestock numbers will probably increase the quantity used.

U.S. net cash income is forecast to shrink 5 percent in 1991. However, the reduction is expected to be even greater in the Northeast and Midwest. In the West and South Central regions, net cash income is likely to be down less than 5 percent. Net cash income in the Southeast will remain about the same as in 1990. The locational differences arise from the types of crops and livestock produced in the regions and the varying degrees of specialization among the regions.

Farm and ranch operations that specialize in fruits and vegetables or red meat will probably see higher net cash incomes in 1991. Incomes for other farm types will either remain steady or fall.

Higher farm real estate values are raising asset and equity levels. Farm asset values (excluding operator households) are forecast to rise 1 to 2 percent above the $838 billion estimated for December 31, 1990. Most of the increase will arise from a 1- to 2-percent increase in real estate values. However, if inflation remains near current levels, these forecasts imply another decline in the real (inflation-adjusted) value of farm sector assets.

Returns to farm assets and returns to farm equity from current income are expected to decline somewhat in 1991 (4 to 5 percent and 3 to 4 percent, respectively), but remain high.

Cash flow after interest ($1982) totaled $41.5 billion in 1990 and is expected to be about $3 billion lower this year, due mainly to an anticipated drop in gross cash income. During 1984-87, cash flow after interest averaged $30 billion.

GLOSSARY OF TERMS IN FARM INCOME AND FINANCE

Net cash income—is the difference between cash receipts, farm related income, and direct Government payments and cash expenses. This cash-based concept measures the total income farmers receive in a given year, regardless of the year in which the marketed output was produced. It indicates the availability of funds to cover cash operating costs, finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income—is the difference between gross farm income and total expenses. This accrual-based concept measures the profit or loss associated with a given year's production. Additions to inventories are treated as income. Nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Net cash flow—is the sum of: gross cash income, the change in loans outstanding, net rent to nonoperator landlords, and the net change in farmers' currency and demand deposits; minus gross cash expenses and gross capital expenditures. This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments.

Debt/asset ratio—measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). It is calculated as total debt outstanding as of January 1, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Equity level—measures net worth. It is the hypothetical balance that would remain from the sale of assets and paying off existing debt. It is calculated as total operator assets minus operator debt outstanding.

Current and inflation-adjusted dollars—In this report, dollar values of income, expense, asset, and debt items, unadjusted for the effects of inflation, are referred to as current or nominal dollars. Current or nominal figures, which indicate the purchasing power prevailing in the cited year, do not allow for fully accurate comparisons across time. To allow for meaningful comparisons across time, adjustments for the effects of inflation are made. Adjusted figures use a 1982 base and are interchangeably referred to as real, constant dollar, or inflation-adjusted.

Farm Income Recedes in 1991

Low wheat and dairy prices and reduced Government payments are contributing to lower cash earnings. With higher cash expenses, net incomes will be less.

Over the past several months, the outlook for 1991 commodity sales has weakened income prospects. Cash receipts are unlikely to top 1990's record. Prices for wheat and dairy products are forecast to average well below last year, and a much smaller wheat crop is expected. A 1-percent growth in crop sales and 1-percent drop in livestock sales are apt to leave total cash receipts between $164 and $169 billion in 1991. Direct payments added slightly more than $9 billion to gross income in 1990, but will be down as much as $1 billion this year. Production expenses are expected to range from $145 to $150 billion, up 1 percent from last year.

Net cash income for 1991 is expected to be between $52 and $57 billion, down $1 to $6 billion from 1990 income. Net farm income for 1991 is expected to range from $40 to $45 billion, $2 to $7 billion. For 1991, net cash income drops 5 percent, while net farm income, which includes noncash forms of income (inventory changes) and expenses (capital consumption) declines 10 percent.

At least half of 1991 cash receipts will be from sales of crops harvested and stored (added to inventory) during 1990. Cash grain production was up nearly 10 percent last year, compared with a slight decline projected for the 1991/92 crops. So, the change in crop inventory is expected to be less than in 1990. Livestock produced but not sold also changes inventory levels. For 1991, the livestock inventory may be up slightly due to an increased number of cattle on farms.

Projections Mixed for Commodity Cash Receipts

Corn sales are not expected to fall much below the $14 billion estimated for 1990, despite somewhat lower prices. But, the 1991/92 corn crop will likely be up 4 percent. The net result would be about a 1-percent rise in corn receipts. Prices for other feed crops are projected to average 4 to 8 percent less in calendar 1991 than in 1990. However, production of all feed crops except oats will be above last year's level. On net, feed crop receipts will be about the same as 1990.

Cash receipts for wheat will probably be less than $6 billion for the first time in 3 years. Wheat production is expected to drop nearly 25 percent this year, following the 35-percent increase in last year's crop. The average annual price will also probably slip more than 5 percent. A smaller crop and lower prices will help reduce wheat cash receipts by more than a tenth in 1991.

Soybean sales are forecast down 5 percent, but higher cash receipts for peanuts, sunflowers, and other oilseeds will likely keep total 1991 oil crop receipts at about $12 billion. Soybean prices are expected to average 4 percent less than last year, and 1991/92 production is expected to dip 2 percent, reducing soybean receipts about 5 percent for 1991.

Fruit and tree nut receipts are forecast to increase as much as $2 billion from 1990. Fresh orange prices have been climbing due to California's December freeze. Apple prices are also up from last year, with a smaller crop. The 1991 index of all fruit and tree nut prices is projected up more than 10 percent. Lower potato and dry bean prices may keep vegetable receipts near the $11 billion earned the last 2 years.

Hog prices are projected to be almost 5 percent below their 1990 average, but more production will keep receipts between $11 and $12 billion. Beef receipts are expected to remain strong and will likely top last year's record of $40 billion. Turkey and broiler production may also be up 4 to 6 percent. But lower prices for eggs and broilers will probably keep all poultry and egg receipts near the $15 billion earned in 1989 and 1990. Current milk price forecasts indicate that 1991 dairy receipts will likely be down $1 to $4 billion from 1990's $20 billion.

Expenses To Expand Modestly

Cash expenses are forecast to total between $124 and $129 billion, up 1 percent from 1990. Livestock producers are likely to see slightly lower feed prices this year, but expansion in livestock numbers will probably increase the quantity used. Thus, feed expense will stay near last year's $22 billion. Fuel, fertilizer, and pesticide expenses are all expected to remain within 1 to 2 percent of last year.

Interest expense for short-term loans is expected to increase about 2 percent this year, rather than decline as previously expected. Total interest expense will be at about $15 billion for the third consecutive year. Expenditures for repair and maintenance of equipment and buildings, hired labor, and property taxes are expected to increase 3 to 5 percent.

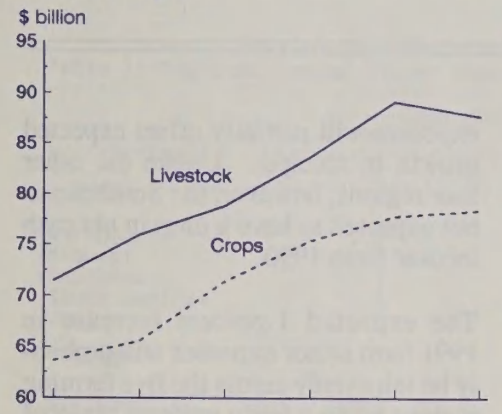
Direct Government Payments Down 10 Percent

Direct payments to farmers are likely to drop $1 billion this year. Advance deficiency payments were probably lower for the 1991 signup than for 1990 because of new program provisions. The acreage set-aside requirements were raised for wheat, but lowered for other crops. For all crops, acreage eligible for payments was reduced 15 percent. Overall participation in commodity programs does not appear to have declined from last year.

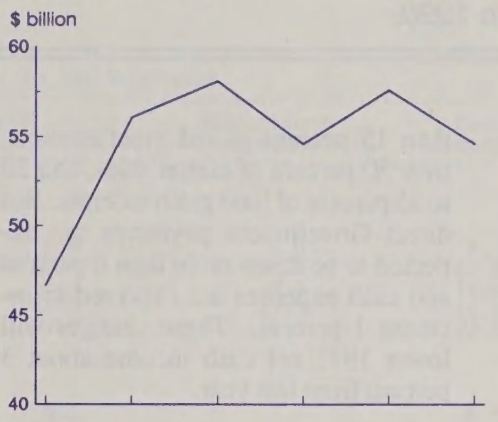
However, if wheat, barley, and oat prices are lower than currently expected in the 5 months following harvest, the 5-month deficiency payment, made in the last quarter of 1991, would be higher than forecast.

Net cash income is forecast down 5 percent in 1991. Falling gross cash income is exacerbated by rising cash expenses. Net farm income could drop 10 percent as noncash components enter the picture.

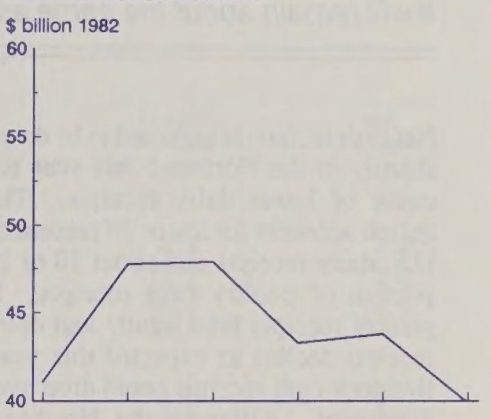
Cash Receipts



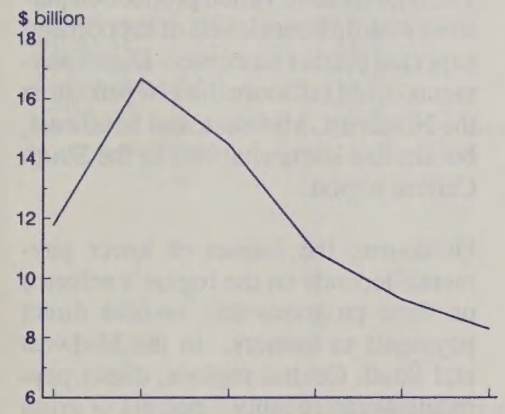
Net Cash Income



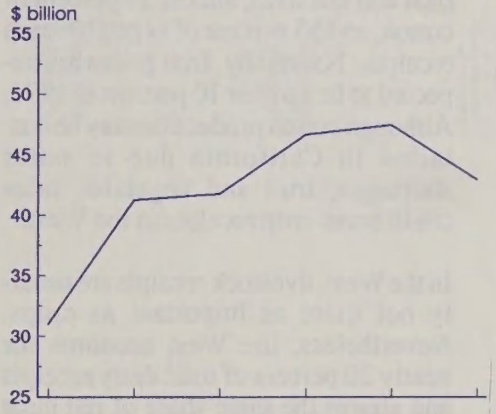
Real Net Cash Income



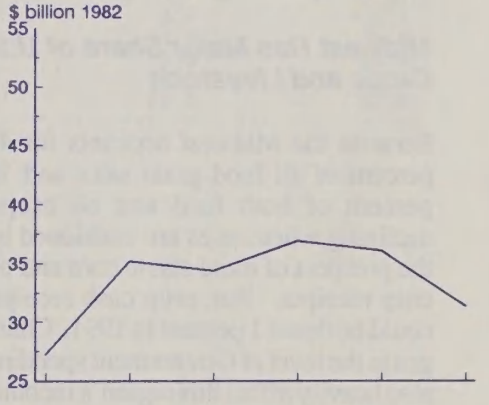
Government Payments



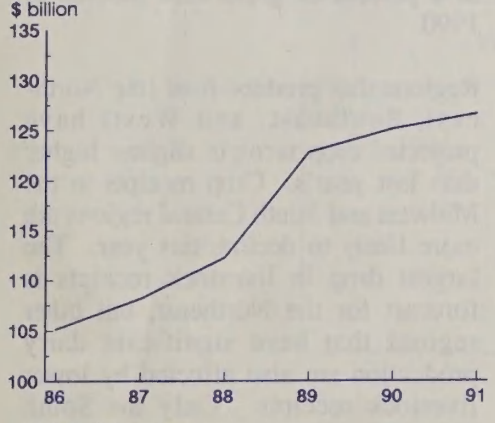
Net Farm Income



Real Net Farm Income

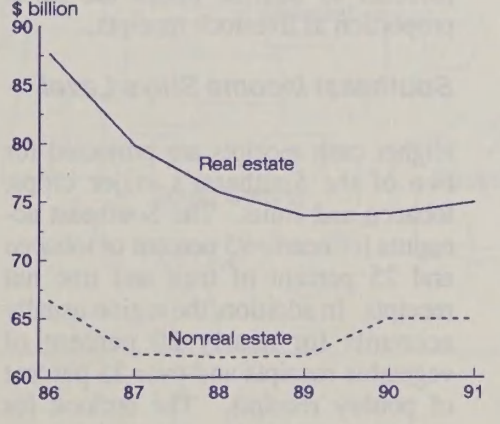


Cash Expenses

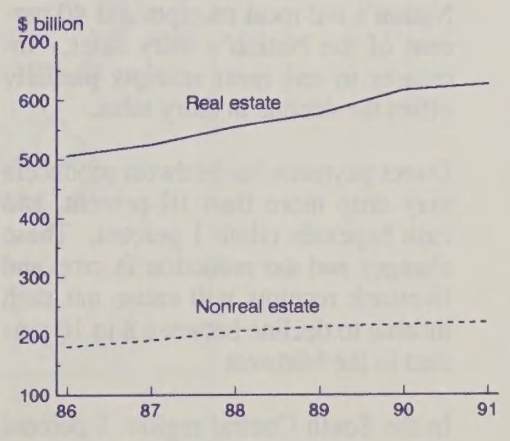


1990-91 forecast.

Farm Debt



Farm Assets



Falling Income Affecting Most Regions

Although U.S. net cash income may shrink 5 percent in 1991, the decline may be even greater in the Northeast and Midwest. In the West and South Central regions, net cash income may be down less than 5 percent while in the Southeast, it will remain about the same as in 1990.

Net cash income is expected to be down sharply in the Northeast this year because of lower dairy receipts. The region accounts for about 20 percent of U.S. dairy receipts and about 10 to 15 percent of poultry cash receipts. If poultry receipts hold steady and dairy receipts decline as expected this year, livestock cash receipts could drop over 5 percent. Although the Northeast provides less than 10 percent of U.S. fruit receipts, these crops are important locally and probably are responsible for crop receipts rising over 2 percent.

Midwest Has Major Share of U.S. Crops and Livestock

Because the Midwest accounts for 45 percent of all food grain sales and 70 percent of both feed and oil crops, declining wheat sales are cushioned by the prospect of more stable corn and oil crop receipts. But, crop cash receipts could be down 1 percent in 1991. Changes in the level of Government spending also heavily affect this region's income.

Midwest livestock receipts are also likely to decline about 1 percent. The Midwest accounts for 55 percent of the Nation's red meat receipts and 40 percent of the Nation's dairy sales. Increases in red meat receipts partially offset the decline in dairy sales.

Direct payments to Midwest producers may drop more than 10 percent, and cash expenses climb 1 percent. These changes and the reduction in crop and livestock receipts will cause net cash income to decline between 8 to 10 percent in the Midwest.

In the South Central region, 1-percent lower crop receipts will probably be coupled with 1-percent higher livestock receipts. The region accounts for about 25 percent of poultry receipts, more than 15 percent of red meat receipts, over 50 percent of cotton sales, and 20 to 25 percent of food grain receipts. But direct Government payments are expected to be down more than 6 percent and cash expenses are expected to increase 1 percent. These changes will lower 1991 net cash income about 3 percent from last year.

The West may see a 3-percent gain in crop receipts in 1991. Farms in this region usually account for 65 percent of fruit and nut sales, almost 35 percent of cotton, and 55 percent of vegetable cash receipts. Nationally, fruit prices are expected to be up over 10 percent in 1991. Although cotton production may be curtailed in California due to water shortages, fruit and vegetable sales could boost crop receipts in the West.

In the West, livestock receipts are usually not quite as important as crops. Nevertheless, the West accounts for nearly 20 percent of total dairy receipts and almost the same share of red meat sales. The likelihood of continued strong red meat receipts will keep livestock receipts from shrinking more than 2 percent this year. Net cash income is forecast to decline about the same proportion as livestock receipts.

Southeast Income Stays Level

Higher cash receipts are projected for two of the Southeast's major crops, tobacco and fruits. The Southeast accounts for nearly 95 percent of tobacco and 25 percent of fruit and tree nut receipts. In addition, the region usually accounts for nearly 20 percent of vegetable receipts and over 35 percent of poultry receipts. The outlook for both vegetables and poultry calls for no major contraction of receipts nationally. However, a projected drop in direct payments coupled with a rise in production expenses will partially offset expected growth in receipts. Unlike the other four regions, however, the Southeast is not expected to have a drop in net cash income from 1990.

The expected 1-percent increase in 1991 farm sector expenses will probably be felt evenly across the five farming regions given a fairly uniform regional distribution of input use. A 10-percent decline in direct payments is more likely to have a variety of regional impacts. The regions have varied production patterns with different levels of support and expected market outcomes. Direct payments could fall more than 10 percent in the Northeast, Midwest, and Southeast, but decline somewhat less in the South Central region.

Of course, the impact of lower payments depends on the region's reliance on farm programs that involve direct payments to farmers. In the Midwest and South Central regions, direct payments were probably 7 percent of gross cash income in 1990. Direct payments were 4 percent of the West's income; while for the Southeast and Northeast, direct payments to farmers comprised 1 to 2 percent of gross cash income in 1990.

Regions that produce fruit (the Northeast, Southeast, and West) have projected crop receipts slighter higher than last year's. Crop receipts in the Midwest and South Central regions are more likely to decline this year. The largest drop in livestock receipts is forecast for the Northeast, but other regions that have significant dairy production are also affected by lower livestock receipts. Only the South Central region is unlikely to have livestock receipts decline this year.

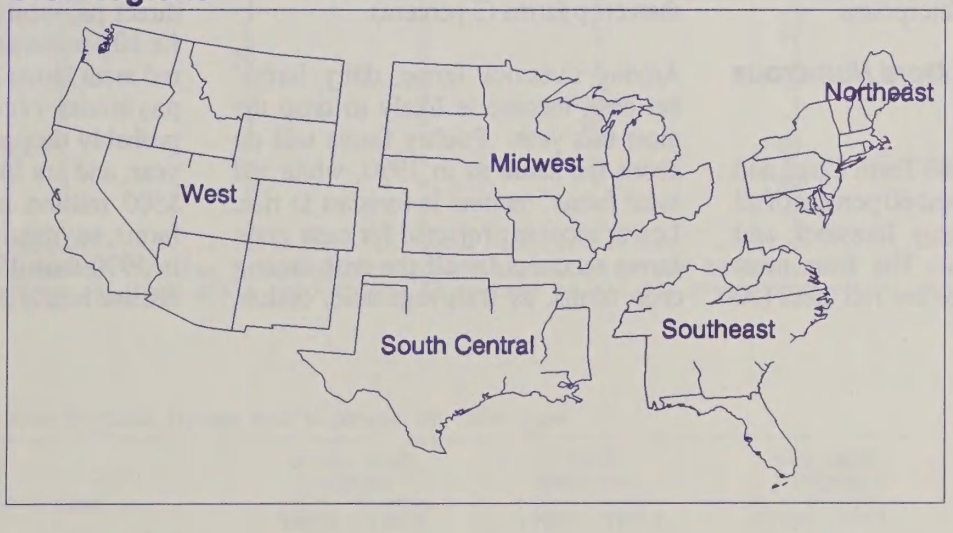
The Midwest is the Nation's largest agricultural region. Net cash income there will total $20 billion, followed by $13 billion in the West.

Table 1--Regional income shares improve in the Southeast

	Cash receipts		Government payments	Cash expenses	Gross income	Net income
	Crops	Livestock				
1989			Percent			
Northeast	5.2	8.4	2.0	6.1	6.5	7.4
Midwest	36.3	42.0	55.1	42.9	40.3	34.3
Southeast	17.1	15.3	7.4	14.4	15.6	18.3
South Central	11.4	16.5	23.0	14.6	14.9	15.5
West	30.0	17.7	12.5	22.0	22.8	24.6
1990F						
Northeast	5.2	8.5	1.7	6.4	6.6	7.2
Midwest	38.2	43.9	6.9	43.7	41.7	37.3
Southeast	16.9	14.6	6.3	13.8	15.6	19.4
South Central	11.7	15.7	18.5	14.3	14.1	13.8
West	28.1	17.3	16.6	21.8	21.9	22.2
1991F						
Northeast	5.3	8.0	1.5	6.4	6.4	6.6
Midwest	37.5	44.1	56.0	43.7	41.3	35.9
Southeast	17.2	14.7	6.2	13.8	15.8	20.4
South Central	11.4	16.0	19.5	14.2	14.2	14.2
West	28.6	17.2	16.8	21.9	22.2	22.9

F = forecast.

U.S. Regions



Incomes Vary Among Farm Types

Farm and ranch operations that specialize in fruits and vegetables or red meat will probably see higher net cash incomes in 1991. Incomes for other farm types will remain steady or fall.

Aggregate income and expense forecasts for the farm sector reflect but do not reveal the outlook for different types of farming and ranching operations. Although most operations produce more than one commodity, a single commodity or group of commodities usually accounts for at least half of the value of production on most farms and ranches. Grouping farms according to the commodities produced and comparing likely income scenarios provides another view of the farm situation.

The most recent data that allow farm-type distinctions are from a survey conducted in 1990 pertaining to farming activities during calendar 1989. To distribute forecasts of expense and income items among farm types, shares must be assumed not to change from year to year. Forecasts for specific types of farms are more sensitive to changes in production and price data than are the farm-sector totals. Specialization implies that a single commodity or input can have more impact on groups of farms with similar enterprises.

Livestock Farms More Numerous than Crops

According to the 1989 Farm Costs and Returns Survey, almost 60 percent of all farms produce mostly livestock and livestock products. The four most numerous farm types are red meat (50 percent of all farms), cash grain (20 percent), dairy (10 percent), and fruit/vegetable (5 percent).

Some types of farms are more specialized than others (table 2). Cash grain farms account for the bulk of grain and oil crop cash receipts, but red meat farms also produce crops and usually account for more than 10 percent of cash grain receipts. Almost all fruit (98 percent) is sold by fruit/vegetable farms. These farms also sell nearly 90 percent of all vegetables.

In 1990, net cash income improved more for livestock farms (10 percent more than in 1989) than for crop farms (1 percent). Poultry farms likely saw incomes decline, while red meat and dairy farms had rising incomes. Incomes rose nearly 10 percent for cash grain farms in 1990, but were down for fruit/vegetable farms. This year, net cash income is expected to be down about 5 percent for the entire farm sector, with farms that produce mainly livestock having a larger decline (7 percent) than crop farms (3 percent).

Among livestock farms, dairy farms' net cash income is likely to drop the most this year. Poultry farms will do about the same as in 1990, while red meat farms' income is forecast to rise. Lower income projected for cash grain farms accounts for all the drop among crop farms, as fruit/vegetable, cotton, and tobacco farms will probably have higher net cash income.

Crop receipts for cash grain farms are projected 2 percent lower than in 1990, but will probably be higher on the other types of crop farms. Livestock receipts are expected to drop more than 10 percent on dairy farms, but to increase for red meat farms.

The 1-percent rise in cash expenses forecast for the farm sector in 1991 will affect crop farms more than livestock operations. Expenses are expected to increase nearly 2 percent on crop farms, because crop farms account for about 65 percent of property tax and labor expense, both of which are forecast to increase this year. Almost 85 percent of total feed expense, which is not expected to increase this year, pertains to livestock farms.

Cash grain farms usually earn nearly 50 percent of direct Government payments. However, livestock farms that raise crops earn about 35 percent of all direct payments. Dairy farms account for 10 percent of all direct payments and red meat farms 20 to 25 percent. Direct payments received by crop farms probably dropped about $1 billion last year, and are likely to be down another $500 million in 1991. For livestock farms, payments were $500 million less in 1990 than 1989, and are forecast to decline nearly that much again this year.

Cash grain, fruit/vegetable, and red meat farms will each see about $12 to $13 billion in net cash income this year. For cash grain farms, net cash income will decrease slightly.

Definition of Farm Types

Farms were classified into types according to the commodity or group of commodities that accounted for at least half of the total value of commodities produced (market sales of livestock). For example, cash grain farms had at least 50 percent of production value from wheat and other food grains, corn and other feed grains, and soybeans and other oil crops. The value of a single cash grain did not necessarily account for half of total production. This classification system corresponds to the Standard Industrial Classification (SIC) system used by the U.S. Department of Commerce.

Farm Type	SIC code	At least half of receipts from:
Cash grain	11	Wheat, rice, corn, sorghum, soybeans sunflowers, other cash grains
Cotton	131	Cotton
Tobacco	132	Tobacco
Fruit-vegetables	134, 16, 17	Potatoes, and other vegetables, fruits, and tree nuts
Nursery-greenhouse	18	Ornamental, and nursery products
Other crops	19	Crops, but not in above categories
Red meat	21	Cattle, calves, hogs, and sheep
Dairy	24	Milk and other dairy products
Poultry and eggs	25	Broilers, other chickens, eggs, and turkeys
Other livestock	29	Livestock, but not in above categories

Table 2--Specialized farms' proportions of production values 1/

	Farm type						
Commodity	Cash grain	Cotton	Tobacco	Fruit-veg	Red meat	Poultry	Dairy
	Percent						
Feed grains	82	1	*	1	8	*	2
Food grains	74	2	*	2	12	0	2
Oil crops	73	3	1	1	11	*	2
Cotton	8	79	*	4	2	0	1
Tobacco	5	0	78	0	5	0	3
Vegetables	2	*	*	88	1	0	1
Fruit	*	*	*	98	1	*	*
Beef	7	*	*	*	88	*	2
Pork	17	*	*	*	75	*	3
Sheep & lambs	9	0	*	*	89	0	*
Poultry & eggs	*	0	0	*	3	89	2
Milk	1	0	*	*	1	0	9

* = less than 0.5 percent. 1/ For example, cash grain farms account for 82 percent of all cash grain production, 74 percent of all food grain production, 73 percent of all oil crops production, etc.

Table 3--Cash income and expenses by farm type

Farm type	Gross cash income		Cash expenses		Net cash income	
	1990F	1991F	1990F	1991F	1990F	1991F
	Billion dollars					
Cash grain	43	42	30	30	13	12
Cotton	6	6	3	3	3	3
Tobacco	3	3	2	2	1	1
Fruit/vegetable	20	21	8	8	12	13
Red meat	56	57	44	44	12	13
Poultry	13	14	4	4	9	9
Dairy	24	21	18	18	6	3

F = forecast.

Continued Asset Growth and Debt Stability: Key Words for 1991

Higher farm real estate values are pushing up asset and equity levels as the sector's 1991 financial position continues to improve.

Farm asset values (excluding operator households) are forecast to rise 1 to 2 percent from the $838 billion estimated for December 31, 1990. Most of the increase will arise from a 1- to 2-percent increase in total real estate values. If inflation remains near current levels (4 percent annual rate), these forecasts imply another decline in the real (inflation-adjusted) value of farm sector assets.

Nominal Asset Values Continued Rising During 1990

Farm asset values rose 2.5 percent during 1990, following a 1.8-percent increase in 1989. The real estate component, which rose 2.2 percent nationally, accounted for 74 percent of the 1990 asset increase. Across the country, however, the farm real estate market provided mixed signals concerning the state of the farm economy. In 4 of the 10 farm production regions, average farm real estate values fell or did not change. Another 4 regions recorded small increases (2 to 4 percent). Only in the Lake States and Mountain regions did the increase exceed the rate of inflation.

Nonreal estate asset values are expected to have increased about 1.6 percent in 1990. The value of crops is expected to be down slightly, while machinery and equipment, livestock, and financial assets may increase slightly.

Real Value of Assets Continues To Decline

Even though most financial indicators, including the nominal value of farm real estate, have shown improvement in the financial condition of the farm sector since 1986, the real (inflation-adjusted) values of farm assets have sustained an almost unabated decline since 1980, when they peaked and then fell precipitously until 1987. The real value of farm assets are now at the lowest level since 1964. During 1987 and 1988 real values of farm assets increased by small amounts, but in subsequent years, inflation has eroded the real value of sector assets.

Debt Up Slightly, but Equity Keeps Rising

Continuing increases in asset values and relatively stable debt are expected to increase equity to $705 to $715 billion in 1991, a gain of about $10 billion. These changes in equity are largely unrealized capital gains. These recent gains reflect investors' expectations of higher longer-term profitability of farm investments.

Debt Ratios Improve for Fifth Consecutive Year

Financial ratios measuring liquidity, solvency, profitability, and financial efficiency suggest continued strength in the farm sector's financial position. Both solvency ratios (debt/asset and debt/equity) declined in 1990, and are expected to fall further in 1991. However, in 1990 the liquidity, financial efficiency, and profitability ratios declined moderately.

Debt/asset ratios improved for the fifth consecutive year during 1990. Higher land values and lower real estate debt reduced the real estate/asset ratio to 8.9 percent from the 1985 peak of 16.3 percent. With land values projected to increase 1 to 2 percent in 1991 and debt expected to be up slightly, this ratio is forecast to decline to nearly 8.8 percent by the end of 1991.

Returns Down Slightly

Returns to farm assets and returns to farm equity from current income are expected to decline somewhat in 1991 (4 to 5 percent and 3 to 4 percent, respectively), but to remain high relative to traditional levels. Estimates of total real rates of return include returns from current income and from real capital gains (losses). The total real rates of return on assets and on equity in 1991 are expected to decline to 2 to 3 percent and 0 to 1 percent, respectively. This compares with total real rates of return in 1988 of 5.7 percent and 5.6 percent.

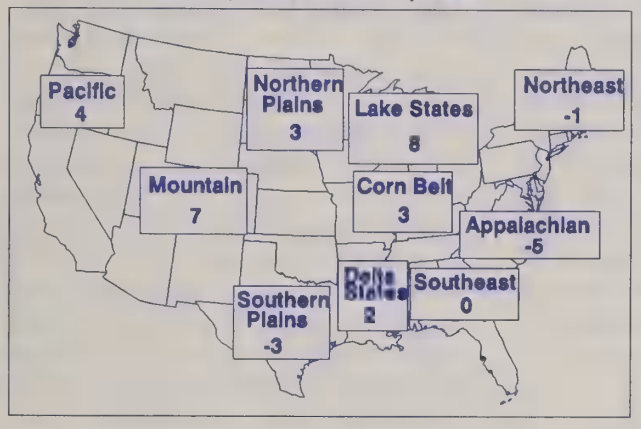
The total real rate of return measures of profitability and the "spread" include the real capital gains component of total returns. The spread equals the total real return on assets minus the real cost of debt. The spread fell from -0.6 percent in 1988 to -3.2 percent in 1989. The spread is expected to be -2.7 percent in 1990 and -4 to -5 percent in 1991. This suggests that debt financing continues to be somewhat less profitable for the farm sector in 1990 and 1991 than in 1988.

Cash Flow Up in 1990 and Down Slightly in 1991

Cash flow after interest ($1982) was $41.5 billion in 1990 and is expected to be about $3 billion lower in 1991, compared with the 1984-87 average of $30 billion. The forecast of lower cash flow is largely due to lower expected gross cash income.

Land values rose again in 1990 with the Lake States region showing the greatest increase. In real terms, however, values fell slightly.

Percent Change in Farmland Values, Jan. 1, 1990 to Jan. 1, 1991



Nominal and Real Values of Total Farm Assets

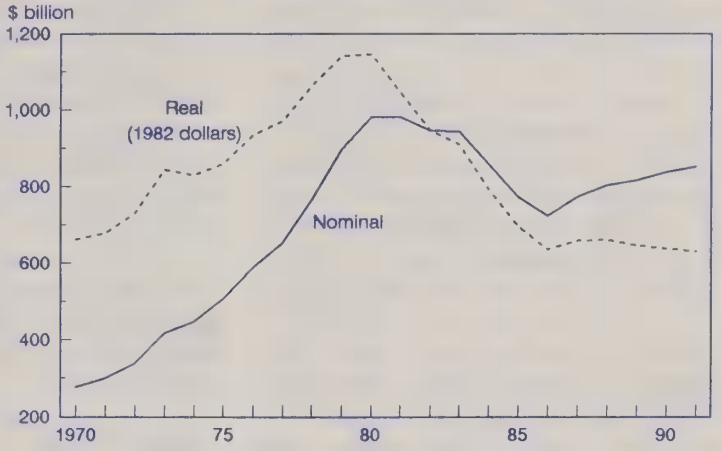


Table 4--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital	Total	Income	Real capital	Total
1982-84	2.2	-7.8	-5.6	0.0	-8.7	-8.7
1985-87	4.2	-5.8	-1.5	2.7	-6.5	-3.8
1988	4.6	1.1	5.7	3.4	2.2	5.6
1989	5.1	-2.3	2.9	4.0	-1.8	2.2
1990	4.8	-2.5	2.4	3.8	-2.0	1.8
1991F	4 to 5	-2 to -3	2 to 3	3 to 4	-2 to -3	0 to 1

F = forecast. 1/Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous years' assets and equity, respectively.

Debt Level To Rise Moderately

Although the farm economy has been improving, credit demand has not increased appreciably. Lenders have funds but borrowers are conservative.

Preliminary indications are that farm business debt increased almost 2 percent in 1990, marking an end to 6 consecutive years of debt reduction (tables 5 and 6). As anticipated, the continuing improvement in the agricultural economy did not substantially escalate new loan demand, as both farmers and lenders remained cautious in financing farm activities. Another year of relatively high net cash income provided farmers with adequate cash to meet their needs with little additional borrowing.

The lack of increased use of credit was not due to poor credit availability. Throughout the year, lenders generally reported adequate funds to meet the needs of credit-worthy customers. However, a more restricted definition of credit-worthiness suggests that lenders have retained a conservative attitude concerning debt-financed farm expansion.

The aggressive pursuit of qualified borrowers by banks and the Farm Credit System (FCS) is reflected in the change in debt held by these primary providers of agricultural credit. Competition for quality loans will most likely intensify in 1991. Commercial bank loan balances increased by over $2.5 billion during 1990, rising for the third consecutive year. Since 1987, commercial banks' loans to farm businesses increased 15 percent to more than $6.2 billion. FCS reported an increase of almost $1.2 billion in outstanding loan balances in 1990, its first annual rise since 1983.

Total farm business debt fell almost 30 percent from its 1983 peak through the end of 1989. The rate of debt reduction slowed from 8 percent in 1987 to 3 percent in 1988 to 2 percent in 1989. The 1990 reversal of this trend is expected to continue for at least another year, as total debt is forecast to increase about 1 percent in 1991.

Earlier projections for yearend 1990 debt had anticipated a more precipitous drop in Farmers Home Administration (FmHA) loan balances. FmHA reported that the rate of debt decline slowed significantly, as the agency continued to deal with its loan delinquency problems. Aggressive implementation of debt restructuring provisions of the Agricultural Credit Act of 1987 had resulted in a nearly $3-billion decrease in FmHA reported loan balances in 1989. A similar reduction had been anticipated during 1990, but actual FmHA farm business debt declined by less than $800 million.

Lender Market Shares Shift

Total farm business debt decreased by $54 billion between 1983 and the end of 1989. This reduction, which was not evenly distributed among farm lenders, reshuffled lender market shares. In 1987, commercial banks surpassed the Farm Credit System as the principal holder of combined real estate and nonreal estate farm debt. Commercial banks' share of all farm lending has increased from less than 22 percent in 1982 to almost 34 percent by the end of 1990. The FCS' market share increased in 1990 for the first time in 8 years, after falling from 34 percent of all debt in 1982 to 27.6 percent in 1989. Bank and FCS market shares are expected to increase in 1991, as their combined share approaches 62 percent of all farm lending.

FmHA Writeoffs Could Still Exeed $6 Billion

Farm debt movements in 1991 will reflect the relative speed with which the FmHA is able to work through its problem loan portfolio. Loan delinquency status reports suggest that, despite writeoffs of over $5 billion during the last 3 years, FmHA loan payments (including principal and interest) that are delinquent more than 1 year still approach $6 billion.

Delinquent FmHA loans made under major farmer programs have declined from almost 37 percent of all loans in 1988 to less than 27 percent of all loans in 1990. Many FmHA borrowers remain seriously delinquent. Of $6.1 billion in delinquent interest and principal payments at the end of fiscal 1990, almost $6 billion were outstanding more than 1 year, with $5.4 billion delinquent more than 4 years. Almost 93 percent of the amount delinquent more than 4 years is on nonreal estate loans, providing FmHA with little recoverable security. About $1 billion are reported delinquent on Economic Emergency loans, made under a program that has not been authorized since fiscal 1984.

FmHA's delay (due to court injunction and legal action) in initiating collection action against chronically delinquent borrowers means that the agency is now reporting loan losses that were actually incurred several years ago. Actual FmHA debt levels at the end of 1991 will reflect not only the catching up of the reporting of these cumulative past losses, but also the loan amounts written off due to continuing restructuring and debt deferral options exercised by remaining delinquent borrowers.

Despite continuing reductions in FmHA loan balances, overall debt levels should increase during 1991. Most lenders, and banks in particular, report adequate funds for farm loans, while farmers are expected to increase capital purchases in response to the improving agricultural economy.

Farmer Mac Has Yet To Become a Factor

Farmer Mac, the secondary mortgage market authorized by the Agricultural Credit Act of 1987, has yet to become a viable force in farm mortgage lending. While two mortgage pools have been approved, and certification of a third is pending, a pool of qualifying farm

mortgages has not yet been made available to securities investors. While lenders had anticipated increasing and diversifying income by originating and servicing loans for sale through Farmer Mac, the loan volume necessary for a viable secondary market in farm mortgages has been slow in developing. The first pools had initially been projected to be marketed by the end of 1989. Interest in Farmer Mac may wane in the absence of considerable action during 1991.

Table 5--Debt outstanding, excluding operator households, by lender, December 31

Lender	1983	1985	1987	1989	1990P	1991F
			Billion dollars			
Real estate	103,176	100,068	82,387	75,307	74	73 to 77
Federal Land Banks	44,316	42,166	30,642	26,657	27	26 to 29
Farmers Home Administration	8,572	9,820	9,429	8,126	8	6 to 7
Life insurance companies	11,666	11,270	9,352	9,038	9	8 to 10
Commercial banks	8,347	10,732	13,541	15,544	16	16 to 18
CCC storage facility	888	307	46	12	1/	1/
Individuals & others	29,386	25,773	19,377	15,929	15	15 to 17
Nonreal estate	87,888	77,524	62,012	61,826	65	63 to 67
Commercial banks	37,075	33,738	27,589	29,243	31	31 to 33
PCAs & FICBs	19,392	14,002	9,384	9,490	10	10 to 12
Farmers Home Administration	12,855	14,714	14,123	10,843	11	8 to 10
Individuals & others	18,566	15,070	10,916	12,250	13	12 to 14
Total debt (excluding CCC)	191,064	177,592	144,399	137,133	139	137 to 143

P = preliminary. F = forecast. 1/ Less than $500 million.

Table 6--Annual percentage change in debt, excluding operator households, by lender, December 31

Lender	1983	1984	1985	1986	1987	1988	1989	1990P	1991F
Real estate	1.3	3.4	-6.2	-9.7	-8.9	-5.8	-3.0	-1.2	1.1
Federal Land Banks	1.5	5.1	-9.5	-15.6	-13.9	-7.4	-6.0	1.0	.7
Farmers Home Administration	3.3	11.1	3.1	-1.1	-2.9	-5.1	-9.2	-7.2	-13.5
Life insurance companies	-1.4	1.9	-5.2	-8.0	-9.9	-3.6	.3	-2.1	5.3
Commercial banks	10.3	15.3	11.5	11.3	13.4	6.3	8.0	3.5	4.5
CCC storage facility	-21.2	-29.8	-50.7	-59.9	-62.8	-54.1	-44.9	-39.5	-28.6
Individuals & others	.2	-3.2	-9.4	-12.1	-14.5	-12.9	-5.6	-5.9	3.1
Nonreal estate	1.0	-.9	-11.0	-14.1	-6.8	-.4	.1	5.2	.4
Commercial banks	8.0	1.5	-10.3	-12.0	-7.0	2.6	3.3	6.9	3.3
PCAs & FICBs	-5.7	-6.7	-22.6	-26.3	-9.0	-6.6	8.3	9.5	6.3
Farmers Home Administration	-.9	6.9	7.1	-2.0	-2.1	-8.7	-15.9	-1.8	-13.2
Individuals & others	-3.0	-5.0	-14.6	-19.4	-10.1	7.7	4.2	4.0	.0
Total debt	1.2	1.4	-8.4	-11.6	-8.0	-3.5	-1.6	1.7	.8
Farm Credit System	-.8	1.5	-13.2	-18.3	-12.8	-7.2	-2.7	3.2	2.3
Farmers Home Administration	.7	8.6	5.5	-1.6	-2.4	-7.2	-13.2	-4.1	-13.4
Life insurance companies	-1.4	1.9	-5.2	-8.0	-9.9	-3.6	.3	-2.1	5.3
Commercial banks	8.4	4.0	-5.9	-6.4	-1.2	3.8	4.9	5.7	3.7
CCC storage facility	-21.2	-29.8	-50.7	-59.9	-62.8	-54.1	-44.9	-39.5	-28.6
Individuals & others	-1.1	-3.9	-11.4	-14.8	-13.0	-5.5	-1.6	-1.6	1.7

P = preliminary. F = forecast.

Interest Rates Declined as Economy Weakened

As the economy improves, interest rates are likely to rise.

At the end of April, the Business Cycle Dating committee of the National Bureau of Economic Research (NBER) designated July 1990 as the peak of the expansion that began in November 1982. Statistics show two quarters of contraction in the general economy, and an unemployment rate that rose from 5.2 percent to 6.8 percent in 9 months.

Recession Prompts Lower Interest and Inflation Rates

In response to the recession, the Federal Reserve has eased monetary policy. The Federal funds rate, the rate at which banks lend reserves to other banks and an indicator of the Federal Reserve monetary policy, dropped 66 basis points between January and February. Smaller declines occurred in March, (13 points), and April (21 points).

Long-term Treasury bond yields, an indicator of long-run inflation pressures and credit market conditions, have not fallen as much as short-term interest rates. Between January and February the 10-year Treasury bond yield shed 24 basis points, to 7.85 percent, only to gain them back in March. During April, the yield remained flat at 8.04 percent.

Inflation from the end of 1990, as measured by the consumer price index (CPI), showed mixed behavior during the first quarter as the economy weakened. The CPI for all items for 3-month periods fell from 4.3 percent at an annual rate ending in January to 1.5 percent ending in April. However, the core rate of inflation for all items less food and energy in 3-month intervals, was 5.9 percent ending in January before declining to 4.4 percent ending in April. Declining energy prices induced the overall inflation rate to fall, while an excise tax increase and other transitory pricing patterns elevated the core inflation rate.

Credit Crunch Still a Hindrance

Despite the falling interest rates and an improved inflation picture, banks have not been quick to extend new loans. The savings and loan crisis and stricter enforcement of bank regulations have caused banks to examine loan requests rigorously over the past year. Only now is there evidence that the credit standards are no longer tightening and may be easing.

Movement in the prime rate is evidence of the credit crunch. During 1990, the prime remained flat at 10 percent. In January and February, the prime fell a half percentage point each month, to hold at 9 percent before retracting to 8.5 percent in May. Despite the downward movement, the spread between the prime rate and the Federal funds rate is wider than at any other point since 1982.

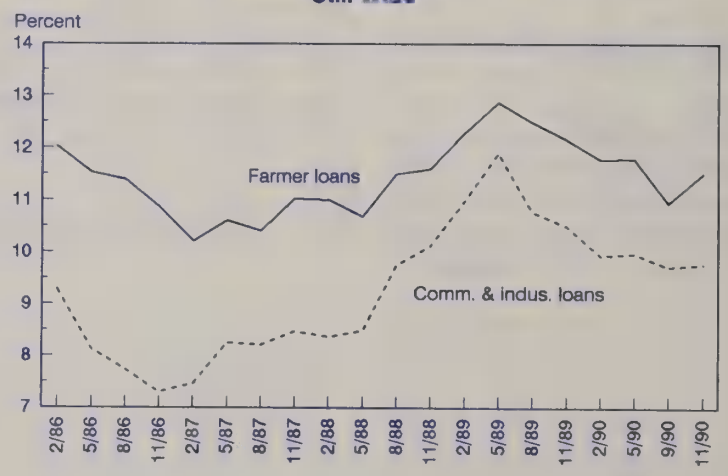
A survey consensus from the National Association of Business Economists (NABE) expects the recession to end in the second quarter. As economic rejuvenation begins, interest rates are likely to rise slightly in late 1991 due to increased demand for credit. Still, on a year-over-year basis, interest rates are likely to range 0.5 to 1.5 percentage points lower than in 1990.

Bank Lending Rates Trend Down for Farmers

For farmers, rates on agricultural loans have followed the downward movement of rates on commercial and industrial loans throughout 1990. However, the farm interest rates rose 56 basis points between the August and November 1990 survey dates, while commercial rates declined. In general, about 67 percent of the movement in commercial loan rates is incorporated into movement of the rates for agricultural loans.

The agricultural and commercial loan rates are reported from a Federal Reserve survey conducted mid-quarter for the first full business week. The interest rate for each category is an average for the loans weighted by size. About 340 commercial banks complete the survey, with 250 banks reporting on loans to farmers. Mortgage loans, purchased loans, foreign loans, and loans of less than $1,000 are excluded from the survey.

Commercial and Farm Bank Lending Rate Spread Still Wide



What Do Farmers Consider Important When Making Management Decisions?

by

Jim Johnson and David Banker [1]

Abstract: A 1988 survey of U.S. farmers and ranchers asked operators what they thought was most important about farming and about their future plans for expansion. Most important was the opportunity to live on a farm or ranch (rural lifestyle). Least important was the use of cash contracts and hedging to market production. Nearly two-thirds of operators said they did not intend to expand or contract the size of their operation.

Keywords: Farm management, attitudes, decision making.

While the farm sector as a whole has emerged from the difficulties of the 1980's in a stronger financial position, financial impacts of the farm crisis were unevenly distributed. Some farms either failed (best estimates show that between 2 and 3.4 percent of farmers involuntarily left farming due to bankruptcy, foreclosure, or other debt repayment problems), or were restructured due to an inability to meet debt service requirements or inadequate collateral to support farm loans. Yet, due to management, resource base, timing of entry, and other factors, a majority of farm businesses maintained a strong financial performance during the 1980's. Even with these operations there is some evidence that business practices have changed.

Bultena, Lasley, and Geller (1) concluded from a 1984/85 study of Iowa farm families that "... one of the more long-lasting impacts of the farm crisis may be on how farmers made agricultural decisions." More specifically, they concluded that the crisis may have caused many farmers to reconsider expansion through the use of credit and debt assumption, perhaps leaning more to rental and lease arrangements. They also argued that farmers might be more conservative in trying new farming practices and technologies, especially when these involve substantial financial risk.

In a 1986 study of future plans of Iowa farm operators (2), the same authors assessed the plans of farmers to expand, contract, or maintain their businesses. From this assessment the authors attempted to gauge the extent of a crisis mentality. They also tested the hypothesis that it is the "... younger, better educated and large-scale operators who are the most committed to an expansionist strategy." Their results indicated that about two-thirds of operators did not intend to expand or reduce the size of their operation. Fewer than 10 percent of operators indicated that they were likely to expand through the purchase of additional acreage or a large piece of equipment such as a tractor or combine. Less than 20 percent indicated that they were likely to expand their operations through renting additional land.

The study found that persons planning to expand differed in both personal and farm-firm characteristics from operators who planned to reduce or maintain their farm size. Farmers planning to expand were younger, better educated, had larger family incomes, operated bigger units, had more farm sales, and carried larger debt loads. Thus, for the Iowa farm families studied through these two surveys, factors previously relevant for farm decisionmaking continued to be important during the financial crisis of the 1980's.

For a national perspective, the USDA's 1988 Farm Costs and Returns Survey [2] can be examined to see how farm operators rank the importance of selected management practices related to improved efficiency and cost containment, marketing, and recordkeeping. Additionally, farmers and ranchers were asked to rank the importance of selected goals such as getting out of debt, expanding the size of the business, and living on a farm.

Respondents ranked the importance of nine farm business management practices and socio-economic goals on a scale of one to five where one was defined as least important. The actual statements presented to farmers were:

1. increasing production per acre or getting better producing livestock;

2. getting labor-saving equipment;

3. using production practices such as fewer times in a field to reduce costs;

4. using strategies such as cash contracts and hedging to market production;

5. keeping records suitable for costs of production and financial analysis;

6. getting out of debt;

7. expanding the size of the operation;

8. having an attractive farmstead; and

9. living on a farm (ranch).

The first two statements are designed to measure farmers' interest in altering production practices to improve efficiency. Statement three measures the importance of cost-reducing practices to farmers after their financial positions had already improved relative to the

[1] Agricultural Economists, Agriculture and Rural Economy Division, ERS.

[2] The survey represented about 1.7 million farms in 1988. This compares with the USDA official estimate of 2.1 million farms. Most of the undercounting is known to occur for farms with annual sales of less than $10,000.

early eighties. Cash contracts and hedging are marketing strategies that can be used to reduce price risk and stabilize income (statement four), while knowing the costs of producing crop or livestock commodities is necessary for farmers to know whether their products are selling at a profit or a loss (statement five). Economists and others have argued that farmers could have avoided some financial problems in the early 1980's if they had used better records and farm financial statements (statement six). Lending institutions, for example, have shown considerable interest in expanding and improving farm financial records.

Controlling a larger business has been recognized as an important goal of some farmers (statement seven). Finally, the eighth and ninth statements measure how farmers rank the importance of having an attractive farmstead and living on a farm or ranch. Appearance of the farmstead is sometimes an indicator of prosperity. The last statement is less oriented toward economics, focusing instead on the non-economic benefits of living on a farm or ranch.

Responses to each of the nine questions are summarized in table A-1. Results are presented for the percentage of operators assigning a ranking of 1 indicating that the item was least important (L) and for operators ranking the item 5 or of highest importance (H). Since all operators are accounted for, the percentage of operators assigning a ranking of 2, 3, or 4 to an item is simply 100 percent minus the sum of L and H. For example, for all farms, 23 percent of operators ranked increasing production as L (least important), 43 percent ranked the item as H (most important), and the remainder, 34 percent, ranked the item as moderately important (2, 3, or 4).

For all operators, the three most important items were living on a farm or ranch, increasing production, and getting out of debt, with the largest percentage of operators assigning the highest importance to living on a farm or ranch. In comparison, on farms with gross sales of $250,000 or more, the same three items were most important, but, increasing production was ranked most important by the largest number of operators. In general, items related directly to the farm business were more important to operators on farms with annual gross sales of $40,000 or more, while living on a farm or ranch was more important to operators on farms with sales below $40,000.

Examination of the responses to each of the nine statements suggests that rankings do in fact differ by factors such as gross sales, production specialty, region, organization, percent of land owned, and operators' age and education. For example 57 percent of all operators aged 34 or younger assigned the highest importance to increasing production, compared with only 31 percent of operators aged 65 or over. Similarly, 67 percent of dairy farmers assigned the highest importance to increasing production, compared with only 21 percent of poultry farmers.

Bultena, Lasley, and Geller noted in their 1986 study that operators planning to expand were younger and had larger farms. The results presented in table A-1 suggest that these same operators place higher importance on the aspects of farming covered in the nine statements than do older farmers or farmers with smaller operations. For example, a higher share of farmers aged 34 or younger assigned a ranking of highest importance to each of the nine statements than did farmers aged 65 or older. As expected, the pattern of rankings by percent of land owned was similar to that observed by gross sales level because operations with more land rented tend to be larger in size. In general, more operators in the Pacific, Lake States, Northern Plains, and the Corn Belt assigned the highest ranking to each of the statements than did operators in other regions. In contrast, many of the statements pertaining to the farm business were ranked least important by a larger share of operators in the Southeast, Delta, and Southern Plains.

Selected characteristics of operators and farms by ranked level of importance for each of the nine statements are presented in table A-2. As in table A-1, the lowest category includes operators who assigned a ranking of 1, or least importance, to a statement, while moderate includes operators assigning a ranking of 2, 3, or 4 to a statement. The highest category includes all operators who assigned a ranking of 5 to an item.

As might be expected, given the results presented in table A-1, operators assigning moderate or higher importance to each of the nine statements were on average younger than those ranking items least important. They also had higher average levels of gross cash farm income, debt, and assets. As measured by their return on assets, operators placing the highest importance on increasing production, getting labor-saving equipment, or increasing operation size were substantially less efficient than those assigning moderate importance to those items. The results suggest that these farmers may be well aware of the necessity of becoming more efficient. Farmers who placed the highest importance on the use of hedging and other marketing strategies also were the most efficient on average.

On a separate question, operators were also asked whether they planned to expand, decrease, or not change the size of their operation during the next 5 years (table A-3). This allowed a comparison of results to the 1986 study cited above, and more importantly, revealed the relationships between operators' plans for expansion and their rankings of the nine statements. As shown in table A-3, nearly two-thirds of all operators did not expect to alter the size of their operation, a result nearly identical to the findings of the 1986 study. Overall, about 20 percent of all farmers expected to expand their operations. The characteristics of these operators—younger, better educated, higher cash income, higher debt loads, and higher assets—correspond to those observed by Bultena, Lasley, and Geller.

Only 3 percent of operators who placed the lowest importance on increasing operation size had plans to expand. At the opposite extreme, only 5 percent of the operators ranking this statement most important planned to decrease the size of their operation. These results suggest a reasonable degree of consistency between responses to the statement and the question concerning plans for operation size. Overall, except for the statement regarding operation size, about twice as many of the operators who ranked the remaining eight statements most important had plans to expand, compared with those who ranked those items least important.

Table A-1--Distribution of farm operations by operators' ranking of importance for specified goals and management practices, 1988 1/

Item	Increasing production		Getting labor saving equipment		Cost cutting production practices		Hedging or other marketing strategies		Keeping records for financial analysis	
	Low	High	Low	High	Low	High	Low	High	Low	High
	Percent									
All farms	23	43	34	18	31	26	57	9	24	34
Gross farm sales:										
$39,999 or less	28	39	42	16	39	21	65	7	31	31
$40,000 to $249,999	14	52	17	25	15	35	40	13	12	39
$250,000 or over	8	59	6	19	7	43	34	13	3	45
Production specialty:										
Cash grain	21	41	26	18	18	38	36	17	14	39
Tobacco	35	33	35	17	32	16	67	7	40	23
Cotton	10	51	8	32	8	44	23	29	9	55
Other field crops	26	33	33	18	24	23	59	6	21	35
Vegetable, fruit, nut	30	47	23	19	24	36	57	10	21	36
Nursery, greenhouse	49	30	33	38	40	34	73	11	29	39
Beef, hog, sheep	23	43	40	17	39	21	63	6	29	32
Poultry	38	21	42	11	58	21	59	16	43	26
Dairy	9	67	18	22	18	34	52	8	15	32
Other livestock	27	46	34	18	32	16	60	5	18	41
Region:										
Northeast	24	38	32	17	26	23	66	7	24	29
Lake States	20	49	22	28	17	32	51	10	15	36
Corn Belt	19	48	34	15	28	29	53	9	20	42
Northern Plains	11	50	17	22	14	36	45	13	9	44
Appalachia	25	39	36	17	33	24	57	10	27	32
Southeast	32	35	53	15	49	18	68	11	32	28
Delta	32	37	39	9	40	23	61	5	36	22
Southern Plains	27	40	42	20	45	22	60	6	40	22
Mountain	22	45	35	16	28	20	55	5	15	40
Pacific	22	52	23	22	27	32	54	9	20	40
Organization:										
Individual	24	42	35	18	33	25	57	9	26	33
Partnership	16	53	18	18	16	38	53	7	14	39
Family corporation	8	60	15	20	15	31	29	15	8	40
Other	6	62	6	24	11	25	54	8	4	81
Percent of land owned:										
76 or more	28	41	40	17	37	22	65	7	29	32
51 to 75	20	40	28	16	24	28	52	8	22	30
25 to 50	14	47	24	20	25	27	45	14	20	33
24 or less	13	52	20	20	18	38	37	14	12	43
Operator's age:										
34 or under	10	57	14	19	21	36	40	12	9	45
35 to 44	19	45	25	18	25	25	49	10	17	39
45 to 54	18	46	33	19	28	28	52	8	20	34
55 to 64	27	45	37	21	34	26	61	9	31	34
65 or over	34	31	47	14	41	21	70	6	35	25
Operator's education:										
Some high school or less	28	36	43	18	39	21	65	8	35	27
High school graduate	22	49	30	18	29	28	55	8	20	36
Some college or more	20	43	29	18	27	28	52	10	20	38

continued--

Table A-1--Distribution of farm operations by operators' assigned ranking of importance of specified goals and management practices, 1988--continued

Item	Getting out of debt		Increasing operation size		Having an attractive farmstead		Living on a farm or ranch	
	Low	High	Low	High	Low	High	Low	High
	Percent							
All farms	38	42	55	11	18	34	15	61
Gross farm sales:								
$39,999 or less	46	39	61	11	20	36	15	63
$40,000 to $249,999	25	51	44	11	13	32	15	61
$250,000 or over	10	49	38	8	20	24	12	46
Production specialty:								
Cash grain	31	46	52	11	15	39	15	59
Tobacco	56	29	54	12	18	27	22	44
Cotton	19	69	50	14	19	28	27	50
Other field crops	34	51	64	12	20	32	12	64
Vegetable, fruit, nut	43	38	67	7	14	30	15	61
Nursery, greenhouse	37	47	49	15	15	50	21	57
Beef, hog, sheep	42	39	56	10	21	33	14	63
Poultry	27	69	55	4	28	23	21	77
Dairy	27	47	51	11	10	32	15	58
Other livestock	33	33	42	12	13	45	7	68
Region:								
Northeast	40	39	57	10	13	38	9	63
Lake States	36	46	56	11	8	48	14	59
Corn Belt	38	43	57	11	16	40	12	70
Northern Plains	20	47	43	12	21	27	7	60
Appalachia	44	41	52	10	18	29	20	54
Southeast	52	37	69	10	31	28	23	58
Delta	37	35	53	10	13	31	20	59
Southern Plains	40	39	52	12	26	28	19	59
Mountain	36	45	56	10	10	31	8	65
Pacific	32	53	62	9	16	39	10	69
Organization:								
Individual	40	42	57	11	18	34	15	62
Partnership	24	43	37	8	21	35	11	57
Family corporation	11	53	31	15	6	17	15	46
Other	29	33	40	27	13	70	22	65
Percent of land owned:								
76 or more	45	38	62	9	20	37	17	61
51 to 75	35	41	52	11	17	22	10	61
25 to 50	26	49	46	12	12	31	12	62
24 or less	22	53	41	16	17	31	11	63
Operator's age:								
34 or under	12	70	25	21	6	42	7	69
35 to 44	21	48	34	18	12	37	12	62
45 to 54	39	43	57	7	14	32	14	61
55 to 64	45	39	67	9	20	37	16	63
65 or over	57	27	73	5	31	27	20	57
Operator's education:								
Some high school or less	50	36	67	8	23	30	15	65
High school graduate	33	46	52	12	19	35	14	62
Some college or more	34	43	49	11	13	36	16	58

Source: 1988 Farm Costs and Returns Survey, USDA. 1/ Low/high rankings refer to the lowest or highest importance of the goal or practice.

Table A-2--Farm operation characteristics by operators' ranking of importance for specified goals and management, 1988

Item	Operator's age	Gross cash farm income	Debt	Assets	Share of gross cash income	Share of debt	Share of assets	Return on assets
	Years	Dollars per operation			Percent			
All farms	53	68,140	47,221	352,175	100	100	100	1.2
Increasing production:								
Lowest	58	28,736	27,963	227,996	10	14	15	-.1
Moderate	53	74,889	46,865	356,339	37	33	34	2.4
Highest	51	83,965	57,791	415,316	53	53	51	.8
Getting labor saving equipment:								
Lowest	58	22,743	21,245	233,849	11	15	22	-.7
Moderate	50	95,145	63,961	401,773	67	65	55	2.3
Highest	52	80,318	50,760	439,274	21	19	23	.4
Cost cutting production practices:								
Lowest	56	30,497	22,871	222,344	14	15	20	.3
Moderate	52	77,035	50,824	387,634	48	46	47	1.4
Highest	51	98,198	70,174	448,046	38	39	33	1.6
Hedging or other marketing strategies:								
Lowest	56	42,985	30,539	316,615	36	37	51	.4
Moderate	50	102,142	69,498	402,149	52	51	39	1.8
Highest	50	96,329	66,975	384,602	13	13	10	3.2
Keeping records for financial analysis:								
Lowest	59	21,274	18,718	206,122	[illegible]	10	14	-1.1
Moderate	52	82,551	50,226	388,883	51	44	46	1.7
Highest	51	84,115	64,063	412,106	42	46	40	1.5
Getting out of debt:								
Lowest	59	27,119	10,558	259,291	15	9	28	-.6
Moderate	51	121,890	67,216	492,689	35	28	27	2.6
Highest	49	80,163	70,945	370,693	50	64	45	1.5
Increasing operation size:								
Lowest	57	52,497	37,432	305,211	43	44	48	1.3
Moderate	49	97,080	65,101	449,153	49	47	43	1.9
Highest	46	56,696	40,800	285,211	9	9	9	-2.3
Having an attractive farmstead:								
Lowest	60	63,560	34,739	319,388	17	13	16	2.7
Moderate	52	79,095	56,259	360,074	56	57	49	1.3
Highest	52	55,094	41,063	358,366	27	30	35	.3
Living on a farm or ranch:								
Lowest	57	67,999	44,523	343,686	15	14	14	2.0
Moderate	52	100,797	56,737	387,938	35	28	26	2.3
Highest	52	55,610	44,210	340,461	50	58	59	.5

Source: 1988 Farm Costs and Returns Survey, USDA.

Table A-3--Distribution of farms by operators plans for expansion and rankings of management practices and goals

Item	Five year plans for operation size		
	Decrease	No change	Expand
	Percent		
All farms	16	64	20
Increasing production:			
Lowest	25	66	8
Highest	13	60	28
Getting labor saving equipment:			
Lowest	20	69	11
Highest	17	57	26
Cost cutting production practices:			
Lowest	21	66	13
Highest	12	62	26
Hedging or other marketing strategies:			
Lowest	18	68	14
Highest	11	56	33
Keeping records for financial analysis:			
Lowest	22	68	10
Highest	12	59	28
Getting out of debt:			
Lowest	18	71	11
Highest	14	60	26
Increasing operation size:			
Lowest	22	75	3
Highest	5	34	61
Having an attractive farmstead:			
Lowest	23	63	14
Highest	15	61	24
Living on a farm or ranch:			
Lowest	20	68	12
Highest	13	64	23
Operators age:			
34 or under	6	40	55
35 to 44	12	52	36
45 to 54	12	68	20
55 to 64	20	69	11
65 or over	24	74	2
Operators education:			
Some high school or less	20	73	7
High school graduate	14	62	24
Some college or more	14	58	28
Gross farm sales:			
$39,999 or less	17	65	18
$40,000 to $249,999	14	59	26
$250,000 or over	10	66	25
	Average per operation		
Operator's age	58	55	42
Gross cash farm income	53,588	68,674	77,748
Debt	41,596	41,514	69,390
Assets	327,804	351,109	374,380

Source: 1988 Farm Costs and Returns Survey, USDA,

The results presented above suggest that farmer's rankings of the importance of ommonly cited goals and farming practices do in fact vary by operator and farm business characteristics. They also support the results of two earlier studies regarding the characteristics of operators assigning greater importance to farm business expansion. While the individual operators' attitudes regarding farming practices have undoubtedly changed to varying degrees during the 1980's, the overall characteristics of those most interested in expansion appear not to have changed significantly.

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Farm Wealth: Its Distribution and Comparison to the Wealth of U.S. Households

by

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Abstract: The average wealth of farm businesses is quite high because farming is a capital intensive industry. This study compares the joint distribution of wealth and income of farm businesses and households to that of all U.S. households. Not only is wealth greater for farm business, it is also more equally distributed than that of all U.S. households. One quarter of all U.S. households had wealth of $5,000 or less, compared to 3 percent of farm businesses. In contrast to all U.S. households, even low-income farm households are associated with farms with large wealth positions.

Keywords: Income distribution, wealth distribution, farm business, U.S. households

The average incomes of farm operators and their households from both farm and off-farm sources are very similar to the average incomes of all households in the United States. Incomes among the farm operator household population are much more unequally distributed, however, than they are for all U.S. households. In 1988, for example, 18.8 percent of farm operator households had incomes below $5,000, compared with only 6.2 percent of all U.S. households.[2]

However, farm households experience a great deal of annual variation in their incomes due to the riskiness of farm production. This is in contrast to most U.S. households with fairly steady annual incomes from wage and salary jobs. As an indicator of economic well-being, a single year's income is less precise for farmer households than it is for most of the U.S. population. The significant annual variation in incomes helps to explain the large proportion of farm households with low incomes in any year. For example, in a drought-stricken area, a farm household might have a below-poverty income following a year in which the household income was in one of the highest income groups in the Nation.

Wealth is an additional indicator of economic well-being that is especially useful for measuring the position of farm operator households. This is because wealth is much less subject to annual variations than are the incomes of farmers. The average farm operation is known to have significantly higher wealth than the average U.S. household. This article reviews the data on the distribution of farmers' wealth collected in the USDA's Farm Costs and Returns Survey and compares that to data recently released by the U.S. Department of Commerce (2) on the wealth of all U.S. households for 1988.[3]

The farm wealth presented here is for the farming business and may overstate farm household wealth. The vast majority of the wealth of the farm business is likely held by the farm operator household. Unfortunately, the exact percent of farm business wealth held by the farm operator household is not known (see box). On the other hand, farm household wealth may be understated because farm business wealth excludes wealth that the farm operator household may hold in personal assets.

In general, farms are significantly more wealthy than U.S. households. The average and median net worths of farms are greater than those of all households. Compared with all households, a higher percent of farms have net worth of $500,000 or more and a much lower percent of farms have very low net worth.

The average net worth of farming businesses in 1988 was $285,173. This

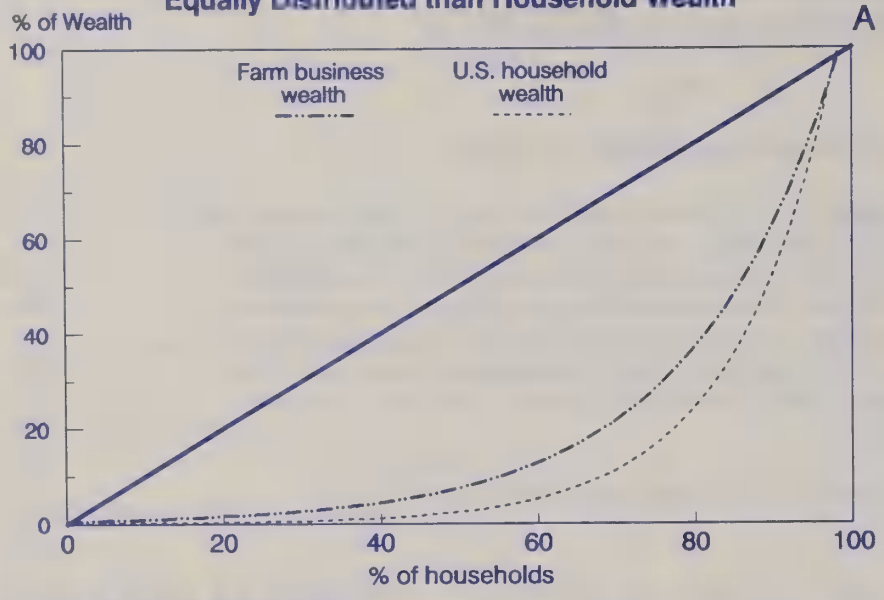
The farm operator household does not hold all of the wealth of the business because many farms have more than one household that collaborate on the farm business. For example, 13 percent of farms are organized as something other than sole proprietors, such as partnerships (10 percent) or corporations (3 percent). Even farms organized as sole proprietors can have more than one household holding some of the wealth of the farm business. An example is where semi-retired farming parents are passing along wealth to their descendants by not receiving a fair market share of the business returns. In 1988, farm operators and their households received only 80 percent of the income of the business. And because sharing of income is the result of a complex set of factors, not all of which are economic in nature, it is unwise to assume that farm wealth is held in proportion to the known distribution of income. Data are currently being collected that will allow a direct measurement of the proportion of wealth held by the farm operator household.

[1] Agricultural economists, Agriculture and Rural Economy Division, ERS.

[2] Farms that are managed as nonfamily corporations, cooperatives, or where the operator does not share in the net income of the business are excluded from this analysis.

[3] This excludes the wealth of landlords who do not operate farms. In 1988, there were approximately 1.3 million individuals who were classified in this category and they owned about 40 percent of the total value of all farm land.

Figure B1—Farm Business Wealth Is More Equally Distributed than Household Wealth



0A reflects perfect equality.

compares with an average net worth of $92,017 for all U.S. households. Thirteen percent of farms had net worth of $500,000 or more. That 13 percent accounted for more than half of all wealth of farming operations in the agricultural sector.[3] The average net worth of these wealthiest farms was over $1.1 million. In contrast, only 3 percent of all U.S. households had net worth over $500,000 and they held 27 percent of all the wealth in the country. Their average net worth was $892,093.

In addition to the superior wealth position of farms relative to U.S. households, these comparisons indicate that wealth is more equally distributed among farms than it is among U.S. households (figure B-1). A large proportion of U.S. households reported little or even negative wealth—26 percent had net worth of $5,000 or less. Only 3 percent of farms had net worth this low. In fact, only 16 percent of farms had net worth of less than $50,000, compared with 57 percent of all U.S. households.

The more unequal distribution of wealth for U.S. households is not surprising considering that farms are relatively more homogenous and require a substantial capital base to be in operation. Farming in the United States is a very capital-intensive occupation. The majority of the U.S. population could not afford to become farmers. Farmers are generally older than the U.S. population, a factor associated with higher levels of wealth, but this is a minor factor compared with the capital requirements of farming as an occupation.

Farms and U.S. households have a striking difference in the link between household income and wealth. For all U.S. households, as incomes rise, so does net worth. However, for farming, many farm operator households have low incomes in any one year, but maintain a very healthy net worth. If the incomes of all U.S. households are ranked from low to high, five equal sized groups, or quintiles, can be created that are useful for examining this issue (table B-1). For all U.S. households, the lowest income quintile group held only 7 percent of all net worth. In fact, the next two lowest quintile groups also held a disproportionately low share of the wealth. The highest income quintile, those with incomes of $46,596 and above, held almost 45 percent of the net worth in the United States (figure B-2).

The relationships between income and wealth are different for farm households at the lowest income level. If the same income ranges are specified for farm operator households (they are no longer equally sized groups), the lowest income group has almost a proportionate share of the wealth. That is, 31 percent of farm operator households were in the lowest income group of $11,268 or less, but they held 28 percent of the wealth of farming operations. This group is dominated by households that were associated with large farms that experienced large farm losses—hence their average incomes were negative and their average net worth was high.

For example, 80 percent of the low-income farm group had net worth in excess of $50,000, but only 20 percent of all low-income households in the United States had net worth of that magnitude. The 50 percent of farm operator households in the middle income ranges held only 40 percent of the wealth of farm businesses. Eighteen percent of the farm households were in the highest income group and they held 33 percent of all farm business wealth.

Figure B2—The Net Worth Distribution of U.S. Households and Farm Businesses

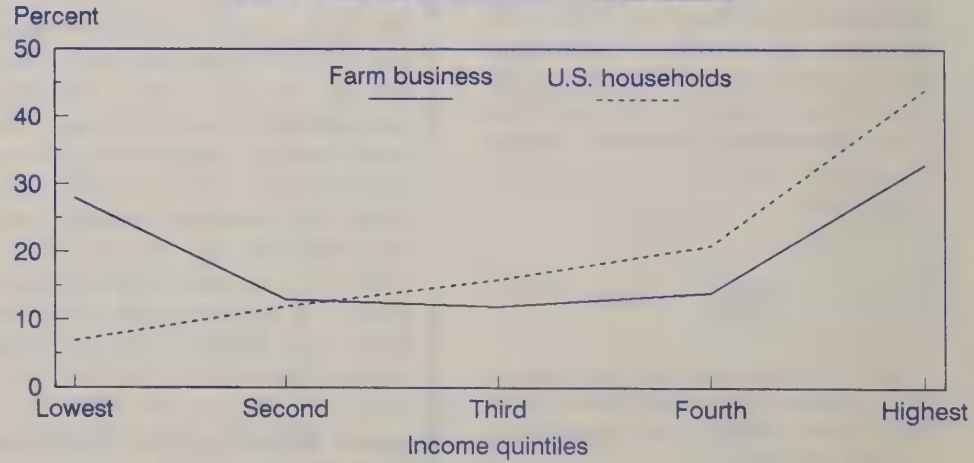


Table B-1--Income distribution and characteristics of U.S. farm operator households and all U.S. households, 1988.

Item	Income quintiles 1/					
	Lowest	Second	Third	Fourth	Highest	Total
Farm Operator Households:						
Number of households (1,000)	543	314	295	283	315	1,749
Percent of households	31	18	17	16	18	100
Household income:						
Mean total income ($)	-5,130	15,736	25,419	37,849	121,763	33,535
Income from farming ($)	-12,518	604	2,389	5,501	39,987	4,706
Median income ($)	3,076	15,655	25,245	37,456	69,422	21,161
Net worth of farm business:						
Mean	253,246	203,928	202,760	252,464	528,028	285,173
Median	134,775	131,450	122,550	283,119	83,512	150,484
Distribution (%)	28	13	12	14	33	100
Households by farm net worth (%):						
Negative or zero	3	2	2	1	1	2
$1 - $4,999	1	1	2	1	0	1
$5,000 - $9,999	1	1	2	0	0	1
$10,000 - $24,999	5	3	4	4	1	4
$25,000 - $49,999	9	8	9	6	4	8
$50,000 - $99,999	19	21	24	17	11	19
$100,000 - $249,999	35	42	34	40	26	35
$250,000 - $499,999	15	15	15	19	26	18
$500,000 or more	11	6	8	11	29	13
Age distribution (%):						
Less than 35	11	10	14	12	10	11
35 - 44	16	14	22	24	22	19
45 - 54	16	18	22	31	31	23
55 - 64	24	25	23	21	24	24
65 or older	32	31	19	12	13	23
U.S. Households:						
Number of households (1,000)	18,299	18,253	18,378	18,310	18,314	91,554
Percent of households	20	20	20	20	20	100
Net worth:						
Mean ($)	32,220	56,536	72,099	94,689	204,449	92,017
Median ($)	4,324	19,694	28,044	46,253	111,770	35,752
Distribution (%)	7	12	16	21	44	100
Percent of households by net worth:						
Negative or zero	26	13	9	5	3	11
$1 - $4,999	26	23	16	8	3	15
$5,000 - $9,999	5	7	9	7	3	6
$10,000 - $24,999	10	11	14	15	7	12
$25,000 - $49,999	12	12	13	16	12	13
$50,000 - $99,999	12	17	15	19	21	17
$100,000 - $249,999	7	14	17	20	29	18
$250,000 - $499,999	1	3	5	7	14	6
$500,000 or more	0	1	1	3	9	3
Age distribution (%):						
Less than 35	25	30	34	31	19	28
35 - 44	12	17	22	27	30	22
45 - 54	9	10	13	17	26	15
55 - 64	13	13	13	14	17	14
65 or older	40	29	18	11	8	21

1/ Quintiles for both groups are established based on the incomes of all U.S. households. Quintile upper limits are: lowest quintile - $11,268; second quintile - $20,388; third quintile - $30,816; fourth quintile - $46,596.

The implications of the importance of the wealth position of farm households are many. In a capital-intensive industry such as agriculture, significant capital constraints can result in low incomes and eventually business failure. Although farms can only be considered wealthy relative to all U.S. households, liquidating their wealth likely means eliminating or diminishing their ability to earn a living. On the other hand, large farm net worth provides farm operator households with extra financial security for retirement or unexpected financial problems.

Because of the capital requirements, agriculture has become more vulnerable than ever to the external forces affecting capital markets in general, such as macroeconomic policies. At the same time, agriculture remains an important industry in terms of the U.S. trade balance and, perhaps, even the country's identity and security. In these times of budget austerity, questions have arisen concerning income support of a group

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Trends in Costs of Production of Corn, Wheat, and Soybeans, 1975-89

by

Robert Dismukes and Paul Westcott[1]

Abstract: While per-acre variable cash production expenses for corn, soybeans, and wheat increased in nominal dollars between 1975 and 1989, real costs trended downward. With the exception of 1978-81, when fuel prices rose sharply, and the late 1980's, when inflation declined, variable cash expenses increased more slowly than inflation and real costs per acre fell. Upward trends in yields reduced real costs per bushel, which trended downward from 1975 to 1989.

Keywords: Inflation, expenses, real costs, production costs, variable costs

Between 1975 and 1989, production costs of corn, soybeans, and wheat increased. Variable cash expenses for corn production were $80 to $90 per planted acre in 1975-78 (figure C-1), rising to $135 in 1981 as prices for inputs, particularly fuels and fertilizers, increased sharply. Corn expenses steadied at about $135 per acre from 1981 until 1986, when they fell to $120. They remained at that level until 1989 when they rose to $133.

Per-acre variable production expenses for soybeans and wheat followed a similar pattern: steady between 1975 and 1978, rising sharply from 1978 to 1981, steady again until the mid-1980's, falling to levels that were above those of the mid-1970's, and climbing again in 1988 and 1989.

Although farmers in 1989 were spending more per acre of corn, soybeans, and wheat, had these crops become more costly to produce? How did farmers' costs change in relation to inflation? How did changes in yields affect production costs per bushel?

Except for the cost of corn drying and some seed costs, variable cash expenses are not affected directly by a crop's yield and price. Fixed cash expenses and land costs, however, are affected by yields and prices. General farm overhead and interest expenses are also a function of yields and prices because USDA allocates these expenses to a particular crop based on its share of total value of production, which is yield multiplied by price. Land costs reflect value of production, most directly through the calculation of share rental costs.

The price level in the U.S. economy, as measured by the GNP implicit price deflator, has increased each year since the Great Depression. As the price level has increased, or inflated, the value of a dollar in relation to all domestically produced goods and services has declined.

Prices rose at annual rates of 6 to 7 percent between 1975 and 1978, 9 to 10 percent between 1979 and 1981, 6 percent in 1982, and 3 to 4 percent between 1983 and 1989. A dollar was worth about half as much in 1988 as it was in 1975.

In other words, after adjusting for inflation, production costs of $50 per acre in 1975 would be about the same as production costs of $100 in 1988. Costs in constant dollars, or real costs, would be about the same. If production costs increase more than the inflation rate, real costs would go up; if costs increase less than inflation or if they decreased, real costs decline.

To adjust production expenses for changes in the value of the dollar, each year's expenses were multiplied by the ratio of the GNP implicit price deflator in a fixed base year, 1982, to the year's deflator. In inflation-adjusted dollars, total variable cash costs per acre of corn, soybeans, and wheat trended downward from 1975 to 1989 (figure C-1).

Between 1975 and 1978, when nominal costs were level, real costs per acre of corn and wheat fell. Soybean production costs in constant dollars also fell initially and then began to rise in 1977, a year earlier than corn and wheat, because of a 50-percent jump in (nominal) seed expenses.

Between 1978 and 1981, sharp increases in fuel and fertilizer prices drove up costs per acre for all three crops. Fuel and energy prices more than doubled and fertilizer prices rose about 40 percent (Indexes of Prices Paid, *Agricultural Prices*). Because corn, soybean, and wheat producers used proportionately more fuel and fertilizer than the economy as a whole, their production expenses increased more than did the general level of prices, and real costs per acre increased.

From 1981 to 1982, real production costs dropped as nominal prices of inputs were steady and 6-percent inflation reduced the value of the dollar. After 1982, as fuel and fertilizer prices declined and inflation dropped to 3 to 4 percent per year, real costs per acre continued to fall.

Costs dropped sharply in 1986 as fuel prices fell 19 percent. Real costs rose slightly in 1989 as input prices, particularly for seeds and fuel, rose while inflation remained low.

Although per-acre production expenses measure costs on the basis of a constant unit—a planted acre—farmers' products are bushels, not acres, of corn, soybeans, or wheat. Yields measured in bushels per acre convert per-acre costs into per-bushel costs. Yields, like costs, can change from year to year. They can increase, for example, because of improved production practices.

Yields are, however, much more variable than costs, primarily because of the unpredictability of weather. Drought during a growing season can sharply

[1] Agricultural Economists, Agriculture and Rural Economy Division and Commodity Economics Division, respectively, ERS.

decrease yields after most production costs have been incurred for tilling, fertilizing, and planting. In 1988, for instance, real variable cash costs per acre changed little from the previous year while drought in the Corn Belt and Central and Northern Plains reduced the U.S. yields per planted acre about 30 percent for corn, about 20 percent for soybeans, and about 15 percent for wheat.

Despite occasional drops, corn, soybean, and wheat yields have increased over time. The most drastic upswings have occurred since the 1940's, because of advances in technology, including improvements in varieties, fertilization, and management. The average U.S. corn yield per harvested acre in the 1940's was 34 bushels; in the 1980's it was 106 bushels. Soybean yields rose from 19 bushels in the 1940's to 30 bushels in the 1980's, and wheat yields from 17 bushels to 33.

To measure yield trends for corn, soybeans, and wheat during the years for which production cost data are available, per-planted-acre yield was regressed on year number. Regression, by fitting a line to the series of actual yields, defines a trend and smooths out what may be regarded as unexpected variation. Between 1975 and 1989 the linear trend for corn yields was upward: 23 bushels over the 15 years. Soybean yields gained 4 bushels, wheat about 1 bushel.

Variable costs per bushel for each year were calculated by dividing costs per acre by trend yields. Real costs of production per bushel of corn, soybeans, and wheat for corn and wheat between 1978 and 1981 and for soybeans between 1977 and 1981 as increases in fuel and fertilizer prices exceeded inflation and the upward trends in yields. After peaking in 1981, real costs per bushel declined, dropping between 35 and 40 percent before leveling off and then rising slightly in 1988 and 1989.

Trends in real costs per bushel were measured by regressing the natural logarithm of costs on year number. A log-linear relationship was specified because variable cash costs, though downward sloping, can never reach zero or become negative. The trend in real costs more closely fit corn and soybeans than wheat, and was stronger for corn and soybeans than for wheat. Real costs for corn and soybeans fell 3 to 4 percent per year; wheat fell about 1 percent.

Real production costs of corn, soybeans, and wheat are sensitive to fluctuations in the prices of fuel and fertilizer, which accounted for about 50 percent of total variable costs of corn and wheat and about 30 percent of variable costs of soybeans between 1975 and 1989. Fuel prices, followed by fertilizer prices, were the most volatile of the input prices during that period.

Wheat costs, which included more fuel than fertilizer costs, varied most in relation to their trend. Corn costs, with fertilizer exceeding fuel, varied less than wheat but more than soybeans, which required less fertilizer and fuel.

Downward trends in real costs of production are consistent with long-term productivity gains in the agricultural sector: More bushels of corn, soybeans, and wheat are produced than previously per constant dollar of inputs.

Notes on Yield Estimates and Costs of Production

USDA's Economic Research Service (ERS) has been estimating costs of production for major field crops annually since 1975. The estimates are published in *Economic Indicators of the Farm Sector: Costs of Production—Major Field Crops*. The most recent edition was published in April 1991 containing 1989 data. An electronic data base (Lotus 1-2-3 worksheets) of the cost-of-production estimates from 1975 to 1989 is also available.

ERS bases its cost-of-production estimates on periodic surveys of farm operators. As part of USDA's annual Farm Costs and Returns Survey (FCRS), farmers are asked to report production practices and cash expenditures for particular production enterprises, such as corn. Because of survey expenses the FCRS cannot cover every enterprise in detail each year.

Base-year data have been collected for each major crop about every 4 years. The data cover application rates of seed and fertilizer; field operations; and cash expenditures for agricultural chemicals, custom operations, and hired labor.

These data are supplemented and updated in nonsurvey years by price data from USDA's *Agricultural Prices*. The most recent FCRS base years and changes in input quantities were in 1985 for soybeans and wheat and in 1986 for corn.

ERS estimates cost of production on a per-planted-acre basis. Costs are included only for acreage that was planted with the intention of harvesting for grain. Excluded are acres of corn planted for silage, and wheat planted as a cover crop or for grazing. Costs are included for production that is abandoned because of crop damage.

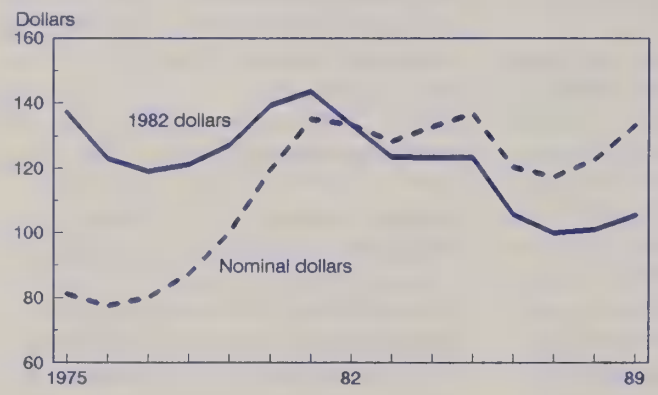
Yields per planted acre associated with the cost-of-production estimates differ from those arrived at by dividing total U.S. production by total planted acres, published in *Crop Production*. Besides excluding acreage not planted for grain harvest, the cost-of-production survey base excludes some States with small amounts of production. Yields are slightly larger than those reported in *Crop Production*. Because the differences do not vary much from year to year, they have little effect on yield trends.

In this analysis variable cash expenses were selected as a measure of costs of production because these expenses can be directly attributed to a particular crop. The intent was to examine the trends in input costs independent of crop prices and year-to-year variation in yield.

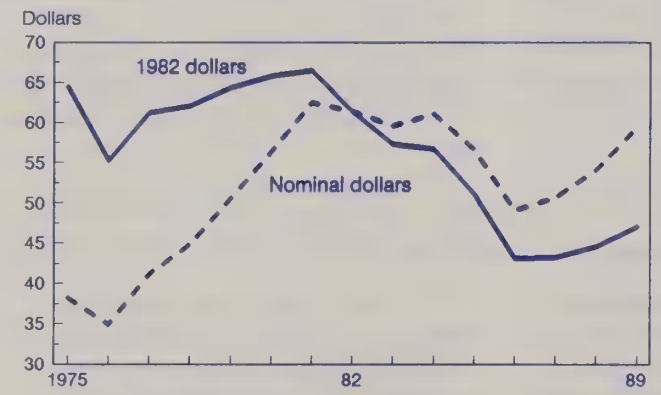
Figure C-1 Variable Cash Production Costs

Per Planted Acre

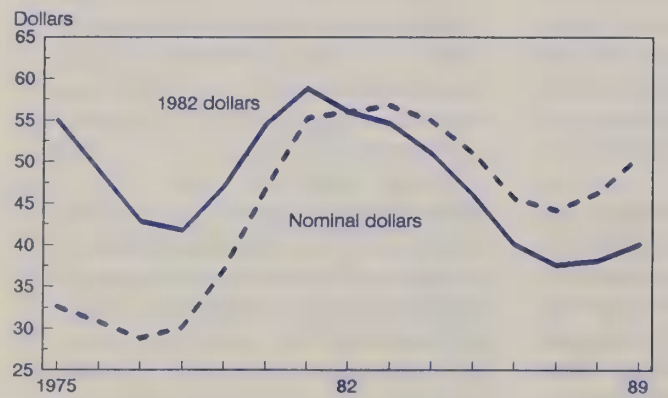
Corn



Soybeans

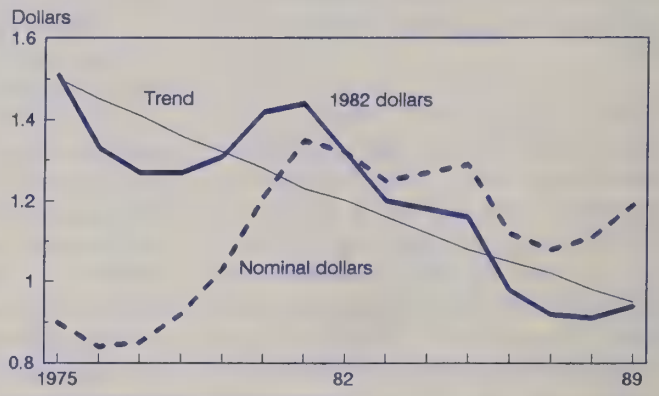


Wheat



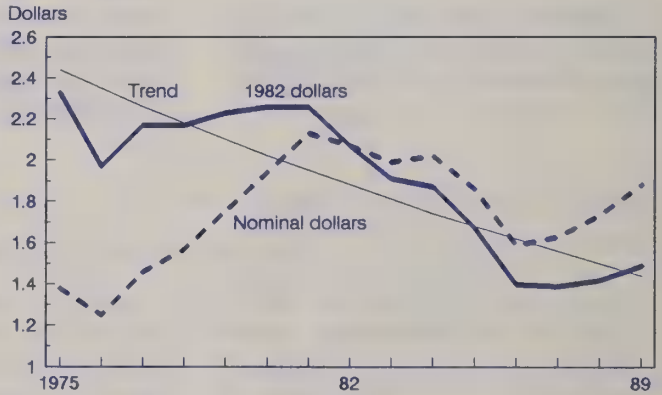
Per Bushel

Corn



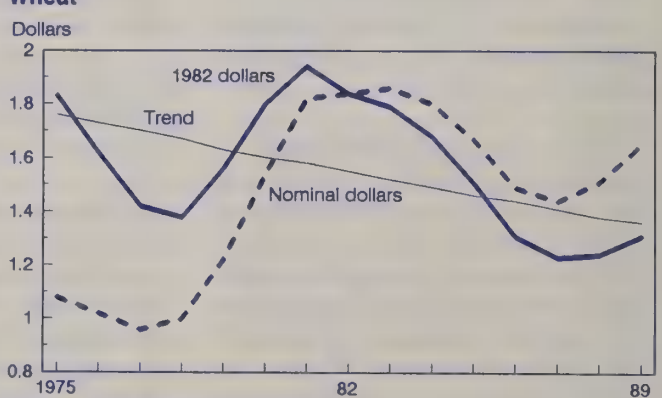
Per-acre costs divided by trend yields.

Soybeans



Per-acre costs divided by trend yields.

Wheat



Per-acre costs divided by trend yields.

Consequently, the economy in general benefits as agricultural products can be produced more cheaply.

Single commodity production costs in themselves, however, provide an incomplete picture of farmers' financial well-being. Declining real production costs do not necessarily improve conditions for farmers. Farm income is determined by more than variable production costs. Costs must be measured in relation to commodity prices. Moreover, farmers generally produce other commodities as well and derive income from direct Government payments and from off-farm sources.

A Profile of Specialized Fruit and Vegetable Farms in 1989

by

John Jinkins and Janet Perry[1]

Abstract: Producers who specialized in fruit and vegetables earned little of their income from other major commodities such as cash grains or livestock. In spite of cash shortfalls in 1989, the financial situation of specialized fruit and vegetable farms compared favorably with that of other farms. Off-farm earnings were an important supplement to the income of fruit and vegetable households.

Keywords: Fruits, vegetables, financial characteristics, Farm Costs and Returns Survey.

About 5 percent of the farms represented by USDA's 1989 Farm Costs and Returns Survey specialized in fruit and vegetable production (see box). Because fruits and vegetables are high-value commodities, they accounted for about 10 percent of the total value of farm production.

Fresh market vegetable production increased 42 percent between 1970 and 1989, while production of processing vegetables went up 59 percent. Fruit production increased 24 percent over the same period. Per capita consumption of fresh and processed vegetables increased more than 7 percent; annual per capita fruit consumption increased 20 percent.

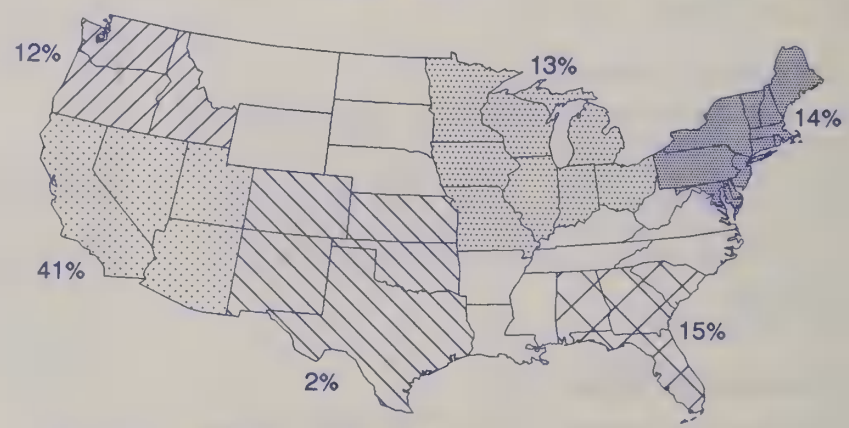
Over half of specialized fruit and vegetable farms were in the western part of the United States (see map). Other major producing regions were the South (15 percent) and the Northeast (14 percent). With 13 percent of the farms, the Lake States accounted for 26 percent of the value of specialized fruit and vegetable production. While it produces much of the winter vegetables, citrus and tree nuts, the South accounted for only 11 percent of the total value of production of fruits and vegetables.

Fruit and Vegetable Growers Specialize

Farmers who specialize in fruits and vegetables often grow many different kinds of those crops. For example, a vegetable farm on the fertile soils surrounding Lake Okeechobee in Florida might produce carrots, radishes, celery, lettuce, parsley, and other vegetables. However, little of the total value of production from farms that specialize in fruits and vegetables comes from other major commodities such as grains or livestock.

Fruit and vegetable production was concentrated among growers who specialize in these commodities. Eighty-one percent of the total value of vegetables produced in the United States came from farms specializing in vegetables.

Figure D-1--Specialized Fruit and Vegetable Farms Are Located In . . .



Note: White areas have less than 1 percent.

Specialization can be measured in two ways. First, what percent of the production of a specialized farm is from the commodity of interest? Second, what portion of a commodity is produced on farms that specialize in that commodity?

Fruit and vegetable farms were among the most highly specialized, with fruit production somewhat more specialized than vegetable production. In 1989, vegetables made up 86 percent of the total value of commodities produced by farmers who specialized in vegetables, and fruit provided 97 percent of the value of production on fruit farms.

Specialized fruit farms accounted for 90 percent of the value of fruit production.

Large Operations Predominate

As was true for most commodities, large farms (those producing $250,000 or more) produced most fruits and vegetables. Some of these large operations do everything from producing plants for transplant to the field to packing produce for shipment across the country.

The 10 percent of specialized large fruit farms in 1989 accounted for more than two-thirds of the value of all U.S. fruit produced. In contrast, the 68 percent of

[1] Agricultural economists, Agriculture and Rural Economy Division, ERS.

specialized fruit growers with less than $40,000 worth of commodity production accounted for just 6 percent of fruit production.

Similarly, specialized vegetable producers in the largest size class grew most of the vegetables. Accounting for only 25 percent of vegetable farm numbers, these large farms accounted for almost 90 percent of the total value of vegetable production. Less than 2 percent of the value of vegetables came from the 48 percent of vegetable farms in smaller size classes.

Financial Conditions Compared With Other Farm Types

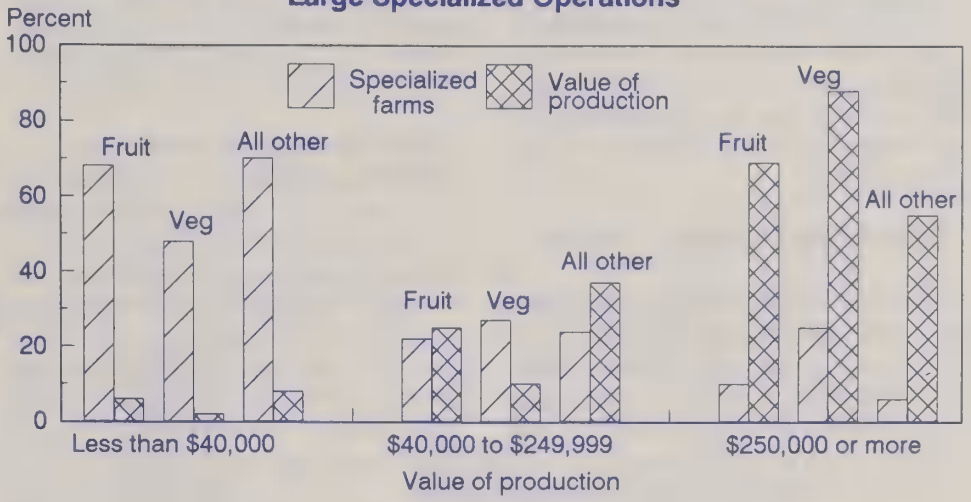
Although fruit and vegetable operations were more likely to have negative cash incomes in 1989, their overall financial condition compared favorably to other farm types.

Cold weather in Florida, Texas, and California and continued drought in the Red River Valley reduced the earnings of many fruit and vegetable growers. More than 20 percent of large fruit and vegetable operations had negative cash incomes compared with 13 percent of other large farms. And, 54 percent of fruit and vegetable growers with a total value of production less than $250,000 had negative cash incomes, compared with 47 percent of other farmers in the same size class. Since short-term problems such as bad weather can cause otherwise financially strong operations to have temporary cash shortfalls, percentages of operations in this category could show large year-to-year changes.

Debt, however, was less of a problem for large fruit and vegetable growers. Fifteen percent of the largest fruit and vegetable farms were in the high debt category (debt/asset ratio more than 40 percent). This compares with 26 percent for other types of large farms. Lighter debt burdens help farmers survive years when there is negative cash income.

Despite having more operations with negative cash incomes, about the same percentage of large fruit and vegetable farms as other types of large farms were in a financially favorable category (low debt and positive net incomes). Their lighter debt burden compensated for the cash shortfall.

Figure D-2--Most Fruits and Vegetables Produced on Large Specialized Operations



Government Payments Less Important

Because fruit and vegetable production is not eligible for Government income support programs such as deficiency payments, farmers that specialize in these crops get a smaller-than-average percentage of their gross farm income directly from the Government. Fruit and vegetable farms earned about 2 percent of their gross income from Government payments, compared with 6 percent for other farms. Though growers receive no direct Government payments for fruits and vegetables, they do benefit from less easily measured types of Government intervention, including federally subsidized irrigation water and import tariffs.

Hired Labor and Rental Arrangements More Important

Fruit and vegetable farm operators depend more on hired labor than most other types of farms and ranches. Vegetables are often thinned, weeded, and harvested by hand. Both fruit and vegetable growers are heavy users of irrigation, a labor intensive cultural practice.

Hired labor accounted for 30 percent of the total cash expenses for fruit producers and 23 percent for vegetable producers in 1989. To produce $100 worth of fruit, growers spent about $25 for labor in 1989. Vegetable growers spent $13 for labor for each $100 of vegetable production.

Rental arrangements provided 11 percent of the land operated by specialized fruit growers, 7 percent on a cash rental

Table D-1--1989 financial condition of fruit and vegetable farms compared with all other farms, by total value of production

Financial condition	Fruit and vegetable farms		All other farms	
	Less than $250,000	$250,000 or more	Less than $250,000	$250,000 or more
	Percent			
Negative cash income	54	21	47	13
High debt	7	15	10	26
Favorable (positive cash income and low debt)	43	65	48	66

Source: 1989 Farm Costs and Returns Survey

basis, and 4 percent on a share basis. Vegetable growers were much more dependent on rented land. Acquiring 40 percent of their land through cash rental arrangements and 6 percent through share leases. For farms other than fruit and vegetable farms, 28 percent of land was rented.

Contracting Provides a Market

Under a production contract, processors or other operations pay farmers to produce a commodity. The contractor may specify how the commodity should be grown and provide some inputs. Under marketing contracts, the producer agrees to provide the contractor with commodities for a specified price, but usually maintains control over how the commodities will be produced. These types of arrangements are important market outlets for specialized fruit farms and even more so for specialized vegetable farms.

Almost all processing vegetables, such as peas and beans for canning and freezing, are grown under contract. Potatoes for french fries and chips are also heavily contracted. Contracting is less common for vegetables and potatoes grown for the fresh market.

Through marketing and production contracts, contractors acquired more than 25 percent of the total value of 1989 fruit production and 43 percent of the value of all vegetable production.

Fruit and Vegetable Production Generates Income for Others

Besides producing income for farm households and contractors, fruit and vegetable production is a source of earnings for other groups such as farm workers, local government, landowners, and lenders. This is especially noticeable in some agriculturally dependent areas of the country such as the Lower Rio Grande Valley in Texas, where freezes or other setbacks for the fruit and vegetable industry cause large increases in unemployment.

In 1989, for each $100 of production from specialized vegetable farms, local governments gained almost $2 in taxes, landowners earned about $5 from rental payments, farm lenders earned $3 in interest payments, and farm workers earned $16 in wages and benefits. One hundred dollars of production from fruit farms generated $4 for local governments, $2 for land owners, $9 for lenders, and $34 for farm laborers.

Incomes Support More Than One Household

Farm operators do not always keep all the net income from the businesses they manage. Significant portions of net income may go to partners, other members of a family corporation, or other owners of the farm business. On the other hand, the operator might not work full time on the farm.

On average, 1 of every 10 farms shared its net income with another household. Smaller farms were the least likely to share farm income with other households. The percent of fruit farms contributing income to more than one household was about the same as for farms producing commodities other than fruits and vegetables, while for vegetable farms the percent was twice as high.

The major occupation, the job where operators spend more than 50 percent of their work time, was something other than farming for nearly half of U.S. farm operators. Over half of the small farm operators, but very few of the large farm operators, spent more time on jobs other than farming. The percent of fruit growers with a major occupation other than farming was about the same as the national average, but only 20 percent of vegetable growers had major occupations other than farming.

Off-Farm Income Important

Fruit and vegetable farm households generally had higher net incomes than other farm households. Household income includes returns from the farm business and all off-farm income. The farm component of household income is net cash income less depreciation expense. This definition is consistent with the money income definition the Commerce Department uses to measure the income of all U.S. households.

Off-farm income includes wages and salaries from off-farm jobs, income from nonfarm businesses, interest, dividends, pensions, and transfer payments. Off-farm income, and therefore household income, is estimated only for conventional farm households.

Conventional farms exclude nonfamily corporations, cooperatives, or farms managed by an operator who does not share in the net income of the business. The excluded farms represent about 1 percent of all farms. The off-farm income of the operator households associated with the excluded farms is not important to the farm business because the operator is not liable for farm debt, nor is the operator likely to subsidize the farm business with personal earnings.

Household income for conventional farms (proprietorships, partnerships, and family corporations) averaged $48,729 for fruit growers and $56,426 for vegetable growers in 1989, compared with $33,461 for all other farm households.

Off-farm income is a large component of farm household income. Income from nonfarm sources accounted for almost 87 percent of average farm household income for fruit growers and 35 percent for vegetable growers. For all other farms, off-farm income was 77 percent of average farm household income.

Another way to look at off-farm income is to measure its contribution to household income. Nationwide in 1989, 87 percent of conventional farm operator households received some off-farm income. About 30 percent of those households received more farm than off-farm income, including 13 percent who received no off-farm income and 16 percent whose farm income exceeded their off-farm income.

Many of the households that received some off-farm income and whose off-farm income was greater than their farm income were operating small farms. A significant share of those households, however, operated large farms that incurred losses. Some farm households that received more income from off-farm sources than farm sources in 1989 even lost more on the farm than they received from off-farm sources. Obviously, farming significantly affects the financial position of those farmers, and off-farm income provides an important measure of stability to their income.

Figure D-3—Vegetable Growers Were More Likely To Have Farming as Their Major Occupation

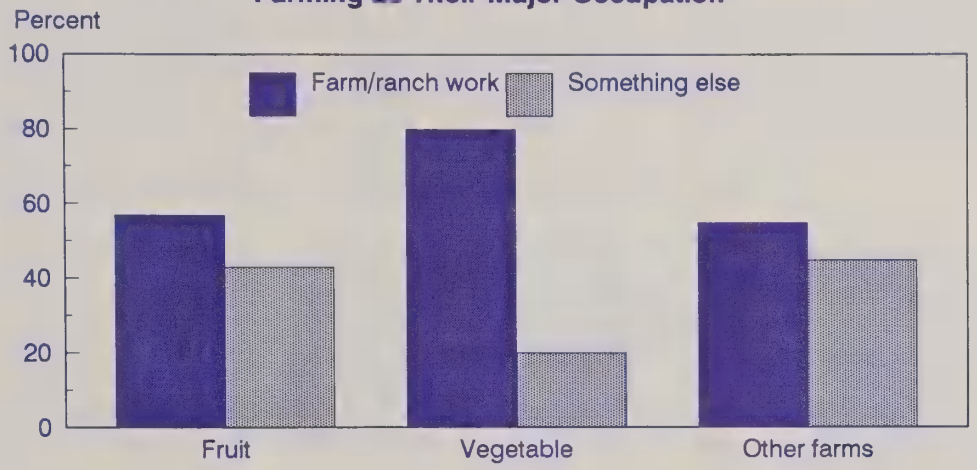


Figure D-4—Off-Farm Income Is Not as Important to Vegetable Growers

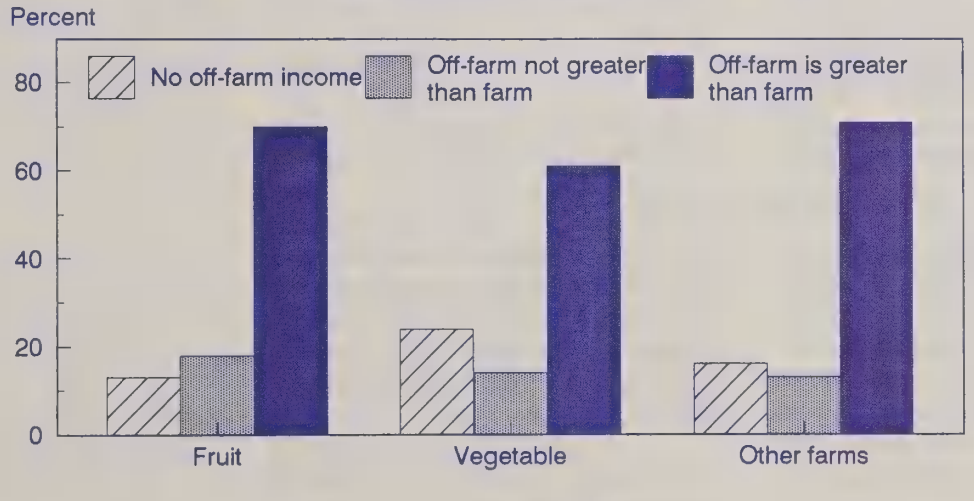


Table D-2--Components of household income of conventional farm households

	Fruit farms	Vegetable farms	Other farms
		Dollars	
Household income	48,729	56,426	33,461
Off-farm income	42,155	19,739	25,751
Farm income to household	6,574	36,686	7,710

Source: 1989 Farm Costs and Returns Survey

viously, farming significantly affects the financial position of those farmers, and off-farm income provides an important measure of stability to their income.

Off-farm income generally plays the same role for the households operating fruit and vegetable farms as it does at the national level. Households operating fruit farms were slightly more likely not to have any off-farm income in 1989. They also were somewhat more likely to incur farm business losses, so their off-farm incomes were more likely to exceed their farm incomes.

The percent of operator households associated with vegetable farms that received off-farm income was very similar to types of farms other than fruit and vegetable farms. Their farm incomes were more likely to exceed their off-farm incomes, in part because of their greater likelihood to have positive returns from farming.

USDA Survey Provides Data

The 1989 Farm Costs and Returns Survey (FCRS) provided the information for this article. Since 1984, the FCRS has been the most complete annual source of data on the costs and returns of producing farm commodities, and the financial condition of farm and ranch operators.

Each operation that participates in the FCRS represents a statistically determined number of other operations. For example, a large vegetable producer might represent 20 other similar operations while a small vegetable producer might represent several hundred comparable operations.

Many growers produce a variety of crops. For this article, FCRS observations were categorized as farms specializing in fruit or vegetables if more than half the value of their production came from either commodity group. Vegetable specialty farms include potato growers.

For instance, consider a farm that produced $50,000 worth of cotton, $50,000 worth of fruit, and $200,000 worth of vegetables. Because more than 50 percent of its total value of production comes from vegetables, this farm is included among those specializing in vegetables.

In 1989, the 611 fruit producers who participated in the FCRS represented almost 59,000 farms, while the 357 vegetable growers surveyed represented about 21,000 operations.

A Production Profile of Sorghum Producers: Government Program Participants vs Nonparticipants

by

Kenneth H. Mathews, Jr.[1]

Abstract: Operators who choose not to participate in Government programs appear to have different objectives for their farming activities than operators who participate. Participants appear to be geared toward increasing their output of Government program commodities, both per acre and per operation, either by increasing planted acres, increasing other inputs, or both. Although participants' costs are higher than nonparticipants', the higher costs are justified by the higher revenues received by participating in Government programs.

Keywords: Government programs, sorghum production, cost of production

Producers who participate in Government programs[2] receive effectively higher revenues per unit of commodity produced than nonparticipants. Moreover, producers' costs associated with idled program acres, spread over all program crop planted acres, are likely to be relatively minor. A recent study found this to be the case for rice (1).

Theoretically, producers who want to maximize profits or net revenues will produce more of a commodity until the cost of producing one more unit is just covered by the additional revenue generated by that last unit of commodity. The same marginal relationship is true for producers who try to keep their costs as low as possible while producing a given level of commodity.

As a result, two hypothetical producers, identical except that only one participates in Government programs, will have different production goals.

The participant will plan to produce more commodity than the nonparticipant. Sorghum producers surveyed in the 1986 Farm Costs and Returns Survey appeared to behave consistently with this economic logic.

Indeed, sorghum producers who participated in Government programs in 1986 planted more acres to grain sorghum. Participants also were on average larger, measured by either value of production or by total acres planted to all crops. In addition, participants were more diversified. Half of the farm sales of participants, for example, was derived from livestock. Interestingly, participants on average owned a smaller proportion of their sorghum land, irrigated a larger proportion of their sorghum, and had a slightly higher debt-to-asset ratio. Although participants had higher total economic costs per acre, their yields were enough higher that their economic costs per bushel were lower.

This article examines characteristics of two groups of producers who grew grain sorghum in 1986—those who participated and those who did not participate in Government programs. Characteristics for each group are compared and contrasted to find variations that suggest different production goals for each group.

Government Program Participation

The proportion of feed grain producers participating in Government programs increased from 1985 to 1986. For grain sorghum and corn, participation increased about one-third and about one-fourth, respectively, from 1985 to 1986. Just under 84 percent of sorghum operators surveyed in the sorghum version[3] of USDA's Farm Costs and Returns Survey (FCRS) participated in Government programs. ARP acres and Government program payments in the FCRS were for all program crops combined[4]. The 84 percent of sorghum operators accounted for just over 86 percent of the sorghum acres and almost 89 percent of grain sorghum production represented in the survey. Of the grain sorghum operations surveyed, 96 percent of those with some irrigated acreage (any crop) participated in Government programs, and these participants accounted for 21 percent of surveyed sorghum production and 18 percent of acreage planted to grain sorghum.

Characteristics of Sorghum Producers

Participants and nonparticipants differed by acreage, yields, land tenure, irrigated acreage, incomes, and financial characteristics. Nonparticipants were, on average, slightly younger (47 years) than participants (50 years).

Since program participation required some of a farm's land be idled, one way for participants to produce more grain sorghum was to operate more acres. Another way to increase the quantity of commodity produced was to make land more productive, through higher applications of fertilizer or irrigation, for example. In addition to more sorghum acres and more total planted acres, participants' expenses for fertilizer and irrigation were higher for participants.

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[1] Agricultural economist, Commodity Economics Division, ERS. The author thanks Bob Pelly, Tim Murray and other reviewers for useful comments.

[2] Government program participants in this study were those who had Acreage Reduction Program (ARP) acres (for all program crops) in 1986. Con-

[3] The sorghum version of the FCRS covered sorghum operations in Arkansas, Kansas, Missouri, Nebraska, and Texas.

[4] The 1986 FCRS did not ask specific questions about base acres on each operation for Government program crops.

Table E-1--Central and Southern Plains sorghum cash production costs per acre by Government program participation, 1986

Item	Nonparti-cipants	Partici-pants
Share of all farms (percent):	16.07	83.92
Yields per acre (bushels)	53	70
	Dollars per acre	
Gross value of production	71.30	94.45
Cash expenses:		
Seed	3.19	3.71
Fertilizer	14.33	17.46
Chemical cost	4.77	11.39
Custom Operation	6.45	3.77
Fuel, lube, and electricity	6.00	5.43
Repairs	8.13	8.27
Hired labor	4.18	4.25
Purchased irrigation water	.27	.08
Technical service	.00	.07
Irrigation	1.07	3.39
Total, variable cash expenses	48.38	57.82
General farm overhead	7.32	8.34
Taxes and insurance	9.37	7.10
Interest on operating loans	6.98	6.40
Interest on real estate	2.20	7.79
Irrigation	.31	1.20
Total, fixed cash expenses	26.19	30.83
Total, all cash expenses	74.57	88.64
Capital replacement	11.14	10.67
Value of production less cash expenses and capital replacement	-14.41	-4.87

Nonparticipants had only half the planted acres (all crops) of participants (respectively 277 and 544 acres on average) and planted an average of 121 acres of grain sorghum, versus 145 acres for participants. Nonparticipants owned a slightly larger share of the land they planted to grain sorghum (38 percent) than participants (35 percent) and irrigated a smaller share, less than 1 percent compared with 14 percent for participants. Nonparticipants may have offset foregone Government program benefits with returns to their owned land.

Sorghum, soybeans, and wheat were the main crops for both groups, accounting for 80 percent of nonparticipants' planted acres and 79 percent of participants' planted acres. Participants who irrigated their land planted proportionally fewer acres of sorghum and soybeans, but more corn and wheat. Participants appear to have more diversified crop mixes, whether by choice or as a result of Government program constraints.

Activities of Sorghum Producers

Changes in Government program requirements may partially explain why participants planted a smaller proportion of their total planted acres to sorghum than nonparticipants, and may account for the relative diversification of participants' planted crop acres. Government program-imposed acreage reduction levels were higher in 1986 (compared with 1985) for almost all program crops. The increase was 75 percent for grain sorghum, and, because almost all program crops faced similar increases, this led to planting of additional nonprogram crops. The drop in loan rates for sorghum ($0.60 per bushel)[5] between 1985 and 1986 could have motivated shifts into crops with higher loan rates or income potential.[6]

[5]Findley Payments, generally lower than calculated loan rates, became the effective loan rates in 1986.

[6]Other motivating factors rose from changes in Government programs with the 1985 farmbillwhich took effect in 1986.

Wheat plantings were proportionally greater for participants, following a decrease in overall acreage reduction levels, both mandatory and voluntary. Plantings in 1986 of hard red winter wheat, the most dominant wheat type in the sorghum producing region, would have been harvested during the second year of reduced loan rates, so some of the psychological impact of the reduced program benefits would already have occurred. Neither group had large proportions of corn, hay, or other crops.

The distinction between the two groups was also reflected in livestock activities. A larger share of participating operations had livestock enterprises—66 percent compared with 47 percent for nonparticipants.

Cattle and hog sales made up about the same share of total livestock sales for participants and nonparticipants (88 to 83 percent). However, participating operations derived a larger share of their total crop and livestock sales from all livestock types—50 percent compared with 36 percent for nonparticipants. For irrigated participating farms, livestock sales comprised even more of their total crop and livestock sales, about 56 percent.

Two-thirds (66 percent) of participants were classified as cash grain farms, compared with 57 percent of nonparticipants. Further, 43 percent of nonparticipants were classified as "other" crop farms, compared with 31 percent of participants. The higher percentage of "other" crops and the lower percent of cash grain farms suggest that more nonparticipants may have grown nonprogram crops. On the other hand, slightly more participants than nonparticipants (3 vs 2 percent) were classified as livestock operations. Among livestock enterprises, only dairy and wool products have Government programs.

Financial Positions Reflect Differences

Off-farm income, rather than production of livestock or other crops, may have been the means nonparticipants chose to diversify their income sources. A lower proportion (48 percent) of nonparticipants identified farming as their main occupation, while 82 percent of participants claimed farming as their

main occupation. These proportions were consistent with the relative off-farm income levels for each group—nonparticipants on average had over twice the off-farm income ($35,334) of participants ($16,051).

Participating operations differed from nonparticipating operations financially as well. Sales of crops and livestock (excluding Government payments) were over twice as high ($75,235) for participants as for nonparticipants ($28,929). Only 6 percent of nonparticipants had sales of over $100,000, versus 33 percent of participants. On the other end of the spectrum, 63 percent of the nonparticipants had sales of less than $40,000, compared with 36 percent of participants.

Participants had about the same average debt-to-asset ratio (0.27) as nonparticipants, with the ratio for irrigating participants the highest (0.29) for any subgroup.

The financial position appeared to be slightly better for participants than for nonparticipants. While 66 percent of nonparticipants were in a favorable to marginal income position (debt-to-asset ratio less than 0.40, positive income [favorable position] or negative income [marginal income position]), over 27 percent of nonparticipants were financially vulnerable (debt-to-asset ratio greater than 0.40 and negative income). Among participants, just over 69 percent were in a favorable to marginal income position, but only 13 percent were financially vulnerable. Almost 17 percent of participants were marginally solvent, compared with 7 percent of nonparticipants.

Participants Spend Slightly More Per Acre

The differences in total sorghum per-acre economic costs of production between participants and nonparticipants mask some of the differences in specific line items and the implications of the specific differences. Participants spent more on fertilizer, chemicals, and irrigation than nonparticipants, suggesting a profit-, income-, or output-enhancing motive as opposed to a cost-reducing intent. The lower levels of variable cash expenses and interest on operating loans among nonparticipants suggest a cost reduction motive.

Participants spent less on custom operations than did nonparticipants, suggesting a cost reduction motive for nonparticipants. However, contrary to what might be expected, nonparticipants did not offset higher custom operations expenses with lower fuel, lube, repair, or capital replacement costs. Participants spent less on all custom and machinery-related expenses, suggesting that nonparticipants used older, less efficient equipment, possibly to their disadvantage.

Conclusions

Operators who choose not to participate in Government programs appear to have different objectives for their farming activities than operators who participate. Participants appear to be geared toward increasing their output of Government program commodities, both per acre and per operation, either by increasing planted acres, increasing other inputs, or both. Although participants' costs are higher than nonparticipants', the higher costs are justified by the higher revenues received by participating in Government programs.

Nonparticipants appear to be motivated to reduce direct costs by irrigating less, operating fewer acres, raising less livestock, and owning a larger share of acres operated. Nonparticipants appear to have offset lost Government program benefits with returns to owned assets, such as land.

Reference

(1)Salassi, Michael, et al. *Effects of Government Programs on Rice Production Costs and Returns, 1988*. AIB-519, USDA, Economic Research Service, March 1990.

Table E-2--Central and Southern Plains sorghum economic production costs per acre by Government program participation, 1986

Item	Nonparticipants	Participants
	Dollars per acre	
Economic costs:		
Variable cash expenses	48.38	57.82
General farm overhead	7.32	8.34
Taxes and insurance	9.37	7.10
Capital replacement	11.14	10.67
Opportunity costs of owned inputs:		
Operating capital	.87	1.04
Nonland capital	8.59	5.97
Land	21.22	26.83
Unpaid labor	13.08	10.03
Total, economic costs	119.97	127.80
Value of production less economic costs	-48.67	-33.36

Measuring the Contribution of Farm Dwellings to Operator Income and Asset Values

by

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Abstract: Dwellings are considered part of the farm sector if they are located on farmland and are either owned or rented by the farm operation. Dwelling services must be imputed because no explicit market transaction occurs between the operator and the farm business. USDA's farm income series values dwellings at the annual income the dwellings services could earn if rented.

Keywords: Farm dwellings, balance sheet, assets

Farm dwellings constitute an important, but little known, facet of farm sector financial accounting—influencing both the balance sheet and the income statement. For USDA's farm income series, farm dwellings are assets of the farm business that provide benefits (in the form of dwelling services) to the operator and others associated with the operation. The value of these dwelling services must be imputed because no explicit market transaction occurs between the operator and the farm business. The value imputed for USDA's farm income series is an estimate of the annual income the dwellings could earn if rented.

Contribution to Farm Sector Assets

Dwellings are considered part of the farm sector if they are located on farmland and are either owned or rented by the farm operation. Dwellings located on lots in towns, cities, or other built-up suburban areas are excluded. Under this definition, farm dwellings can be classified into four categories: 1) owned and occupied by farm operators, 2) owned by the farm operation, but occupied by hired labor, 3) owned by farm operations, but occupied by partners or other persons closely associated with the farm operation, and 4) occupied by tenants.

The values of farm dwellings are measured at current market values using data from the annual Farm Costs and Returns Survey (FCRS). The 1989 estimated market values of farm dwellings in each category are shown in table F-1. In total, farm dwellings contributed an estimated $115.1 billion to the value of farm sector assets. Farm dwellings owned by farm operations and occupied by farm operators are by far the largest category. Estimates from the 1989 FCRS indicate that 85 percent of farm operations own the operator's dwelling. However, only 85 percent of those operation-owned dwellings, with an estimated value of $92.9 billion, are considered part of the farm sector.

Since 1980, USDA has published two versions of the farm sector balance sheet for purposes of separating assets and debts of farm households. Balance sheets for the farm sector were first constructed in 1940 when it was more appropriate to treat the farm business and household as a single economic entity. Compared to now, farm operations then were more homogeneous, farm families were more dependent on farm income, and the economic health of the farm business and the farm family were more closely tied.

Today, separation of farm household assets and debt facilitates the analysis of farm business activity. The asset section of the balance sheet account that excludes the operator household is derived from the including account by subtracting the values of operator dwellings, household equipment, and those portions of automobiles, trucks, and financial assets that are designated for family use. The value of farm dwellings accounts for nearly 62 percent of the difference between the accounts.

Contribution to Farm Sector Income

Farm income is a measure of the value of goods produced and services provided by agricultural enterprises in a given calendar year. The major sources of income are sales of crops and livestock. But, farm assets also are used to provide services that yield income to farm businesses, including machine hire and custom work, recreation, and dwellings. Because the assets used to provide these services belong to the farm business, the income earned is included in farm income. In calendar 1989, farm dwellings contributed an estimated

Table F-1--Market value and imputed rent for farm dwellings, 1989

	Market value	Gross imputed rental value
	Thousand dollars	
Operator dwellings (owned)	92,875,232	5,517,810
Operator dwellings (rented)	6,826,768	405,585
Hired labor dwellings	4,643,762	308,000
Other dwellings	10,773,526	646,410
Total dwellings	115,119,288	6,877,805

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$6.57 billion to gross farm income in the form of implicit rental income.[2]

Even though most goods and services are purchased and consumed in one accounting period, durable items such as dwellings are purchased in one period, but yield a flow of services over many periods. Analysts assume that the proportion of lifetime services provided in a particular period is equal to the dwelling's rental value. But, the rental value of farm dwellings must be imputed because no explicit rental transaction occurs. By definition, owner-occupied housing is not rented and tenant dwellings are usually rented as part of a larger package that includes farmland. The paucity of data on farm-dwelling rents led analysts to use rent-to-value relationships to approximate rental value.

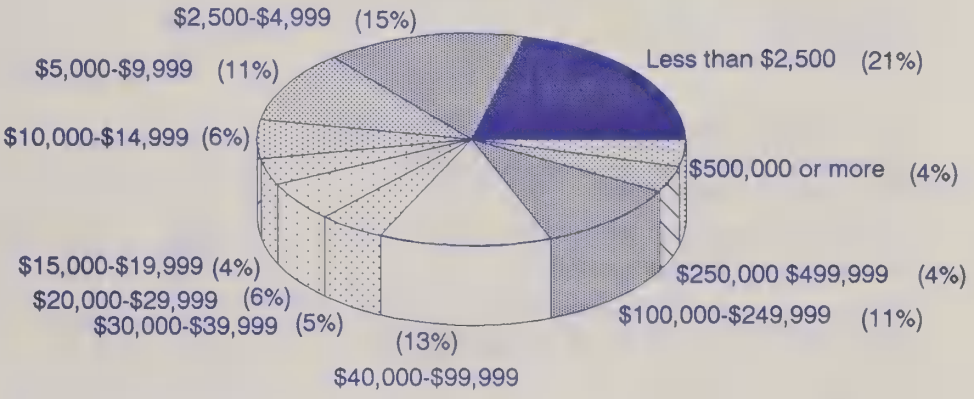
The gross rental value of farm dwellings is estimated as a proportion of their current market value. The (gross) rent-to-value ratios vary by value of dwelling, ranging from .043 for dwellings valued at more than $150,000 to .179 for dwellings valued at less than $10,000. Similar procedures are used by the Department of Commerce in the National Income and Product Accounts to impute a value for the rental services of owner-occupied dwellings in the nonfarm sector. USDA's estimates of the rental value of farm sector dwellings are added to those prepared by Commerce to estimate the value of all dwellings in the United States.

A large portion of the imputed rental value is attributable to dwellings on small farms. Figure F-1 shows that 68 percent of dwelling rental income is attributable to farms with less than $40,000 in annual sales of agricultural products—farms usually not considered commercial-size farms. Over 50 percent of imputed dwelling rental income accrues to farms with less than $15,000 in annual sales.

Figure F-2 demonstrates that farm dwellings provide a major source of (implicit) income for small farms. In 1989, the rental-equivalent income provided by farm dwellings accounted for over 50 percent of the gross farm income earned by farms with sales of less than $2,500. Together, figures F-1 and F-2 demonstrate that the implicit value provided by farm dwellings is at least a partial explanation for the viability of many small farm businesses.

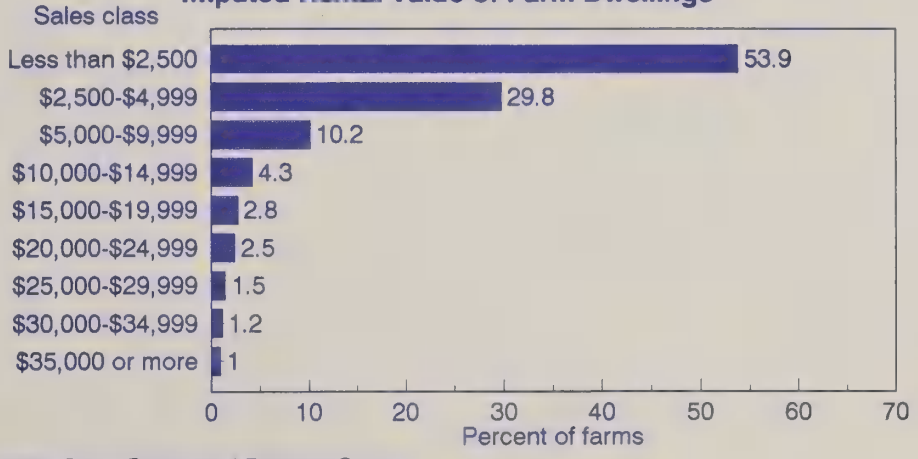
For calendar 1989, the farm sector income statement indicated a gross farm income of $191.6 billion. The farm sector balance sheet showed $972.2 billion of assets. The value of farm dwellings and the shelter they provided accounted for an important share of both those financial indicators—accounting for 11.8 percent of farm assets and 3.4 percent of gross farm income, respectively.

Figure F-1--Distribution of Gross Imputed Rental Value for Farm Dwellings, by Sales



Source: 1989 Farm Costs and Returns Survey

Figure F-2--Percentage of Farms with At Least 50% of Gross Farm Income Represented by the Gross Imputed Rental Value of Farm Dwellings



1989 Farm Costs and Returns Survey

[2]The *net* rental income from these dwellings, obtained by subtracting expenses attributable to the dwelling (including real estate taxes, insurance, mortgage interest, repair and maintenance, and depreciation), amounted to $2.2 billion (nearly 5 percent of net farm income).

Appendix table 1--Farm income, assets and debt, and returns, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Income and total returns:						
1. Gross farm income 1/	151	163	167	183	187	182 to 186
2. Wages and perquisites to hired labor	9	10	10	10	12	12 to 13
3. Other operating expenses, excluding interest	74	78	82	90	91	89 to 93
4. Capital consumption	16	14	15	15	16	15 to 17
5. Net income from assets and operators' labor and management (1-2-3-4) 2/	53	61	61	67	69	62 to 66
6. Income imputed to operators' labor and management	24	24	25	26	29	28 to 32
7. Residual income to assets (5-6)	29	37	36	42	40	33 to 37
8. Real capital gain to assets	-57	20	12	-19	-20	-20 to -24
9. Total return from assets (7+8)	-28	56	48	23	20	11 to 15
10. Interest paid	16	15	14	15	14	13 to 15
11. Real capital gain to debt	4	7	5	6	7	5 to 6
12. Total return to equity (9-10+11)	-40	49	39	15	13	4 to 6
13. Real capital gain to assets and debt (8+11)	-53	27	17	-13	-14	-14 to -18
14. Residual income to equity (12-13)	13	22	22	27	26	19 to 23
Balance sheet: 3/						
15. Assets	724	774	803	817	838	845 to 855
16. Debt	157	144	139	137	140	137 to 143
17. Equity (15-16)	567	630	664	680	699	705 to 715
			Percent			
Rates of return and interest rates:						
18. Rate of return on assets (ROA) (7/15)	3.9	4.9	4.6	5.1	4.8	4 to 5
19. Real capital gain on assets (8/15)	-7.6	2.6	1.1	-2.3	-2.5	-2 to -3
20. Total real return on assets (18+19)	-3.7	7.5	5.7	2.9	2.4	2 to 3
21. Av. interest rate paid on debt (10/16)	9.8	9.7	10.1	10.5	9.8	9 to 10
22. Real capital gains on debt (11/16)	2.5	4.8	3.8	4.4	4.7	3 to 4
23. Real cost of debt (21-22)	7.3	5.0	6.3	6.1	5.1	6 to 7
24. Rate of return on equity (ROE) ((7-10)/17)	2.2	3.7	3.4	4.0	3.8	3 to 4
25. Real capital gain on equity ((8+11)/17)	-9.1	4.5	2.2	-1.8	-2.0	-2 to -3
26. Total real return on equity (24+25)	-6.9	8.2	5.6	2.2	1.8	0 to 1
27. Net return on assets (NROA) (18-21)	-5.9	-4.8	-5.5	-5.4	-5.0	-5 to -6
28. Spread (20-23) 4/	-11.0	2.6	-.6	-3.2	-2.7	-4 to -5

F = forecast. Numbers may not add due to rounding. 1/ Excludes operator dwellings. 2/ Numbers in parentheses indicate components required to calculate a given item. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Farm income sources:						
1. Cash receipts	135.2	141.7	150.2	159.2	167	164 to 169
Crops 1/	63.7	65.6	71.4	75.4	78	76 to 80
Livestock	71.5	76.0	78.8	83.7	89	86 to 90
2. Direct Government payments	11.8	16.7	14.5	10.9	9	8 to 9
Cash Government payments	8.1	6.6	7.1	9.1	8	7 to 8
Value of PIK commodities	3.7	10.1	7.4	1.7	1	0 to 1
3. Farm-related income 2/	5.0	5.9	5.7	7.4	6	6 to 7
4. Gross cash income (1+2+3) 3/	152.0	164.3	170.4	177.5	183	179 to 184
5. Nonmoney income 4/	6.9	7.5	7.5	7.3	8	7 to 9
6. Realized gross income (4+5)	158.9	171.8	177.9	184.8	190	186 to 191
7. Value of inventory change	-2.4	-2.8	-4.1	4.4	3	0 to 3
8. Total gross income (6+7)	156.5	169.0	173.8	189.2	193	188 to 193
Production expenses:						
9. Cash expenses 5/ 6/	105.2	108.2	112.3	122.8	125	124 to 129
10. Total expenses	125.5	127.7	132.1	142.6	146	145 to 150
Income statement:						
11. Net cash income 1/ 6/						
Nominal (4-9)	46.7	56.1	58.1	54.6	58	52 to 57
Deflated (1982$) 7/	41.1	47.8	47.9	43.3	44	39 to 41
12. Net farm income 1/						
Nominal total net (8-10)	31.0	41.3	41.8	46.7	47	40 to 45
Deflated (1982$) 7/	27.3	35.2	34.4	36.9	36	30 to 33

F = forecast. Totals may not add due to rounding. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and miscellaneous sources. 3/ Numbers in parentheses indicate components required to calculate a given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator.

Appendix table 3--Relationship of net cash to net farm income, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Gross cash income	152.0	164.3	170.4	177.5	183	179 to 184
Minus: Cash expenses	105.2	108.2	112.3	122.8	125	124 to 129
Equals: Net cash income	46.7	56.1	58.1	54.6	58	52 to 57
Plus: Nonmoney income:						
Gross rental value of dwelling	6.0	6.6	6.7	6.6	7	6 to 8
Value of home consumption	.9	.8	.8	.7	1	0 to 1
Value of inventory change	-2.4	-2.8	-4.1	4.4	3	0 to 3
Minus: Noncash expenses:						
Depreciation & accidental damage	17.7	16.5	16.7	17.3	18	17 to 20
Labor perquisites	.4	.5	.5	.4	1	0 to 1
Minus: Household expenses 1/	2.1	2.5	2.6	2.0	2	1 to 3
Equals: Net farm income	31.0	41.0	41.8	46.7	47	40 to 45

F = forecast. Totals do not add due to rounding. 1/ Includes expenses related to operator dwelling.

Appendix table 4--Cash receipts, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Crop receipts: 1/						
Food grains	5.7	5.8	7.5	8.1	8	6 to 8
Wheat	5.0	5.0	6.4	7.2	7	5 to 7
Rice	.7	.7	1.1	.9	1	1 to 2
Feed grains and hay	16.9	14.5	14.3	16.7	19	18 to 21
Corn	12.3	9.9	9.0	11.1	14	13 to 15
Sorghum, barley, and oats	2.3	2.1	2.2	2.1	2	2 to 3
Hay (all)	2.2	2.5	3.0	3.5	3	3 to 4
Oil crops	10.6	11.3	13.5	12.2	12	11 to 13
Soybeans	9.2	10.0	12.2	10.8	11	10 to 11
Peanuts	1.1	1.0	1.1	1.1	1	1 to 2
Cotton lint and seed	3.4	4.2	4.5	4.7	5	5 to 6
Tobacco	1.9	1.8	2.0	2.4	3	2 to 3
Fruits and nuts	7.2	8.1	9.1	9.0	8	8 to 10
Vegetables	8.8	9.9	9.8	11.3	11	10 to 12
Greenhouse & nursery	5.9	6.7	7.0	7.3	7	7 to 8
Other crops 1/	3.3	3.3	3.7	3.7	4	3 to 5
TOTAL CROPS	63.7	65.6	71.4	75.4	78	76 to 80
Livestock receipts:						
Red meats	39.1	44.5	45.9	46.6	52	51 to 55
Cattle and calves	28.9	33.6	36.2	36.7	40	39 to 43
Hogs	9.7	10.3	9.2	9.4	12	11 to 12
Sheep and lambs	.5	.6	.5	.5	*	0 to 1
Poultry and eggs	12.7	11.5	12.9	15.3	15	14 to 16
Broilers	6.8	6.2	7.4	8.8	8	8 to 9
Turkeys	1.9	1.7	2.0	2.2	2	2 to 3
Eggs	3.5	3.2	3.1	3.9	4	3 to 4
Other poultry	.4	.4	.4	.4	*	0 to 1
All dairy products	17.7	17.7	17.6	19.4	20	16 to 19
Other livestock	2.0	2.3	2.4	2.4	2	2 to 3
TOTAL LIVESTOCK	71.5	76.0	78.8	83.7	89	86 to 90
TOTAL RECEIPTS	135.2	141.7	150.2	159.2	167	164 to 169
Program 2/	53.9	52.8	56.3	59.7	64	59 to 61
Non-program 3/	81.3	88.8	93.9	99.5	103	104 to 108

F = forecast. * = less than $500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Receipts from commodities directly supported by farm programs. 3/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type, 1989-91 1/

Item	Crops					Livestock			
	Total crops	Cash grain2/	Tobacco	Cotton	Fruit, nut, vegetables	Total livestock	Red meat	Poultry and eggs	Dairy
				Thousands					
Number of farms:									
1989	896	466	77	19	94	1,275	1,056	12	200
1990	884	460	76	19	93	1,259	1,042	12	197
1991F	873	454	75	19	92	1,243	1,029	12	195
				Billion dollars					
Income:									
1. Cash receipts--									
Crops									
1989	69.7	29.9	2.2	4.7	19.8	5.7	4.4	*	1.0
1990	72	32	2	5	19	6	5	*	1
1991F	73	31	3	5	20	6	4	*	1
Livestock									
1989	5.9	4.3	.2	*	.1	77.8	43.0	13.7	19.8
1990	7	5	*	*	*	83	47	13	21
1991F	7	5	*	*	*	81	48	13	18
2. Direct Government payments--									
1989	7.2	5.3	.1	.9	.2	3.7	2.5	*	1.1
1990	7	5	*	1	*	3	2	*	1
1991F	5	4	*	1	*	3	2	*	1
3. Gross cash income-- 3/									
1989	86.3	41.2	2.5	6.1	20.8	91.1	52.2	13.8	23.4
1990	88	43	3	6	20	95	56	13	24
1991F	88	42	3	6	21	93	57	14	21
4. Cash expenses--									
1989	58.8	29.3	2.2	2.8	7.6	64.0	42.4	4.3	17.8
1990	60	30	2	3	8	65	44	4	18
1991F	61	30	2	3	8	66	44	4	18
5. Net cash income--									
Current dollars 4/									
1989	27.5	11.8	.3	3.3	13.2	27.1	9.8	9.5	5.5
1990	28	13	*	3	12	30	12	9	6
1991F	27	12	1	3	13	28	13	9	3
Deflated ($ 1982)									
1989	21.8	9.4	.2	2.6	10.4	21.5	7.8	7.5	4.4
1990	21	10	*	3	9	23	9	7	5
1991F	20	8	*	2	9	20	10	7	2
Balance Sheet: 5/									
6. Farm assets--									
Real estate									
1989	307.2	155.6	11.8	8.2	64.3	385.5	309.4	3.1	69.9
1990	314	159	12	8	66	393	316	3	71
1991F	319	162	12	8	67	400	321	3	73
Nonreal estate									
1989	119.8	72.8	3.8	4.8	13.4	161.8	113.4	1.0	45.3
1990	125	76	4	5	14	168	118	1	47
1991F	127	77	4	5	14	172	120	1	48
7. Total liabilities--									
1989	74.5	42.2	2.4	4.0	8.4	76.2	49.3	1.0	24.9
1990	77	44	3	4	9	79	51	1	26
1991F	77	44	3	4	9	79	51	1	26
				Percent					
8. Debt-to-asset ratio--									
1989	17	18	16	31	11	14	12	24	22
1990	18	19	16	31	11	14	12	24	22
1991F	17	18	16	31	11	14	12	23	21

F = forecast. * = less than $500 million. Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of the total value of production accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4. 5/ Excludes farm households.

Appendix table 6--Farm production expenses, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Farm-origin inputs	30.8	33.1	36.7	39.4	40	38 to 42
Feed	17.9	18.0	20.6	22.7	22	21 to 23
Livestock	9.8	11.8	12.8	13.0	14	13 to 15
Seed	3.2	3.3	3.3	3.7	4	3 to 5
Manufactured inputs	18.2	18.1	18.4	20.7	21	20 to 23
Fertilizer	6.8	6.5	6.8	7.6	7	6 to 8
Fuels and oils	5.3	5.0	4.9	5.3	6	5 to 7
Electricity	1.8	2.2	2.2	2.1	2	2 to 3
Pesticides	4.3	4.5	4.4	5.7	6	5 to 7
Total interest charges	17.1	15.5	15.2	15.1	15	14 to 16
Short-term interest	7.9	7.3	7.3	7.5	8	7 to 9
Real estate interest	9.1	8.2	7.9	7.6	7	6 to 8
Other operating expenses	30.3	32.6	33.0	36.5	38	37 to 41
Repair & maintenance	6.5	6.8	6.9	7.8	8	8 to 9
Labor expenses	9.9	10.8	11.2	11.9	12	11 to 13
Machine hire & custom work	2.1	2.1	2.3	2.7	3	2 to 4
Animal health	1.2	1.3	1.3	1.5	2	1 to 2
Marketing, storage & transportation	3.7	4.0	3.3	4.2	5	4 to 6
Misc. operating expenses	6.9	7.6	8.1	8.3	9	8 to 10
Other overhead expenses	29.2	28.5	28.8	30.8	32	31 to 34
Capital consumption	17.7	16.5	16.7	17.3	18	17 to 20
Taxes	4.5	5.0	5.1	5.3	6	5 to 6
Net rent to nonoperating landlords	7.0	7.0	7.0	8.2	8	8 to 9
TOTAL PRODUCTION EXPENSES	125.5	127.7	132.1	142.6	146	145 to 150
Cash expenses 1/	105.2	108.2	112.3	122.8	125	124 to 129

F = forecast. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Farm assets	724.3	773.9	803.0	817.1	838	845 to 855
Real estate 1/	542.2	578.6	599.4	605.1	618	620 to 630
Livestock and poultry	47.8	58.0	65.5	69.7	71	70 to 74
Machinery and motor vehicles	81.9	79.4	80.6	83.8	86	85 to 89
Crops stored 2/	16.0	19.5	21.9	22.6	23	21 to 24
Purchased inputs	2.0	3.3	3.4	2.8	3	2 to 4
Financial assets 3/	34.5	35.1	35.4	36.6	37	36 to 40
Farm debt	157.0	144.4	139.4	137.1	140	137 to 143
Real estate 4/	90.4	82.4	77.6	75.3	74	73 to 77
Nonreal estate	66.6	62.0	61.7	61.8	65	63 to 67
Total farm equity	567.4	629.5	663.6	679.9	699	705 to 715
			Percent			
Selected ratios:						
Debt-to-asset	21.7	18.7	17.4	16.8	16.6	16 to 17
Debt-to-equity	27.7	22.9	21.0	20.2	20.0	19 to 21
Debt-to-net cash income	336.0	257.0	240.0	251.0	240	240 to 260

F = forecast. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying facility loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31, 1986-91

Item	1986	1987	1988	1989	1990F	1991F
			Billion dollars			
Farm assets	847.3	913.4	955.2	973.3	1,000	1,010 to 1,020
Real estate	613.0	658.6	687.0	692.7	707	715 to 725
Livestock and poultry	47.8	58.0	65.5	69.7	71	70 to 74
Machinery and motor vehicles	86.1	84.5	85.7	88.2	91	90 to 94
Crops stored 1/	16.0	19.5	21.9	22.6	23	21 to 24
Purchased inputs	2.0	3.3	3.4	2.8	3	2 to 4
Household goods	28.7	32.9	37.0	42.2	46	47 to 51
Financial assets	53.8	56.7	58.1	58.7	59	58 to 62
Farm debt	166.6	153.7	148.5	146.0	148	146 to 152
Real estate 2/	95.9	87.7	83.0	80.5	79	78 to 82
Nonreal estate	70.8	66.0	65.6	65.5	69	67 to 71
Total farm equity	680.7	759.7	806.7	827.3	852	865 to 875
			Percent			
Selected ratios:						
Debt-to-asset	19.7	16.8	15.5	15.0	15	14 to 15
Debt-to-equity	24.5	20.2	18.4	17.6	17	16 to 18
Debt-to-net cash income	356.3	273.9	255.5	267.0	245	245 to 255

F = forecast. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying facility loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency, 1986-91

Farm financial ratios	1986	1987	1988	1989	1990F	1991F
			Ratio			
Liquidity ratios:						
Household debt service coverage 1/	4.68	5.65	5.95	5.80	6.1	5.9 to 6.1
Farm business debt service coverage 2/	2.57	3.23	3.42	3.24	3.5	3.2 to 3.4
Debt servicing 3/	.16	.13	.12	.12	.1	.1 to .2
Times interest earned ratio 4/	3.11	3.99	4.11	4.44	4.6	4.1 to 4.3
			Percent			
Solvency ratios:						
Debt/asset 5/	21.7	18.7	17.4	16.8	16.6	16 to 17
Debt/equity 6/	27.7	22.9	21.0	20.2	20.0	19 to 20
			Percent			
Profitability ratios:						
Return on equity 7/	2.2	3.7	3.4	4.0	3.8	3 to 4
Return on assets 8/	3.9	4.9	4.6	5.1	4.8	4 to 5
Net farm to gross cash farm income 9/	20.7	25.1	24.7	26.3	26.6	23 to 24
			Percent			
Financial efficiency ratios:						
Gross ratio 10/	69.2	65.8	65.9	69.2	61.6	62 to 63
Interest to gross cash farm income 11/	10.8	8.9	8.4	8.2	7.4	7 to 8
Asset turnover 12/	20.3	21.9	21.6	22.1	21.5	21 to 22
Net cash farm income to debt ratio 13/	37.7	47.0	51.1	50.1	51.5	48 to 49
			Ratio			
Financial leverage index 14/	.56	.75	.74	.78	.8	.7 to .8

F= forecast. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors (debt) and owners (equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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